G. AIR QUALITY

INTRODUCTION

This section discusses the existing air quality conditions in the project area, presents the regulatory framework for air quality management, and analyzes the potential for the Proposed Project to affect existing air quality conditions, both regionally and locally, from activities that emit criteria and non-criteria air pollutants. It also analyzes the types and quantities of emissions that would be generated on a temporary basis from proposed construction activities as well as those generated over the long term from operation of the Proposed Project. The analysis determines whether those emissions are significant in relation to applicable air quality standards and identifies feasible mitigation measures for significant adverse impacts. This section also includes an assessment of the potential for odor impacts and an analysis of cumulative air quality impacts. Emissions of greenhouse gases (GHGs) resulting from the Proposed Project's potential impacts on climate change and the City's and State's goals for GHG emissions are presented and discussed in Section 4.H, Greenhouse Gas Emissions.

The analysis in this section is based on a review of existing air quality conditions in the Bay Area region and air quality regulations administered by the U.S. Environmental Protection Agency (EPA), the California Air Resources Board (CARB), and the Bay Area Air Quality Management District (BAAQMD). This analysis includes methodologies identified in the updated BAAQMD *CEQA Air Quality Guidelines*[1] and its companion documentation. Additionally, an Air Quality Technical Report (AQTR)[2] was prepared for the Proposed Project; this report quantitatively assesses the air quality contributions of the Proposed Project and forms the basis of much of the assessment of air quality impacts herein.

ENVIRONMENTAL SETTING

CLIMATE AND METEOROLOGY

The project site is in the San Francisco Bay Area Air Basin (SFBAAB or air basin). The air basin's moderate climate steers storm tracks away from the region for much of the year, although storms generally affect the region from November through April. San Francisco's proximity to

[1] BAAQMD *CEQA Air Quality Guidelines*, Updated May 2012. Available online at http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/baaqmd-ceqa-guidelines_final_may-2012.pdf?la=en. Accessed July 19, 2016.

[2] Environmental Science Associates, Pier 70 Mixed Use District Project Air Quality Technical Report, December 2016.

the onshore breezes stimulated by the Pacific Ocean provides for generally very good air quality in the City and at the project site.

Annual temperatures in the project area average in the mid-50s (degrees Fahrenheit), generally ranging from the low 40s on winter mornings to the mid-70s during summer afternoons. Daily and seasonal oscillations of temperature are small because of the moderating effects of nearby San Francisco Bay. In contrast to the steady temperature regime, rainfall is highly variable and confined almost exclusively to the "rainy" period from November through April. Precipitation may vary widely from year to year as a shift in the annual storm track of a few hundred miles can mean the difference between a very wet year and drought conditions.

Atmospheric conditions such as wind speed, wind direction, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants regionally. The project area is within the Peninsula climatological subregion. Marine air traveling through the Golden Gate is a dominant weather factor affecting dispersal of air pollutants within the region. Wind measurements recorded on the San Francisco mainland indicate a prevailing wind direction from the west and an average annual wind speed of 10.3 miles per hour (mph).[3] Increased temperatures create the conditions in which ozone formation can increase.

AMBIENT AIR QUALITY – CRITERIA AIR POLLUTANTS

As required by the 1970 Federal Clean Air Act, the EPA initially identified six criteria air pollutants that are pervasive in urban environments and for which State and Federal health-based ambient air quality standards have been established. The EPA calls these pollutants "criteria air pollutants," because the agency has regulated them by developing specific public health-based and welfare-based criteria as the basis for setting permissible levels. Ozone, carbon monoxide (CO), particulate matter (PM), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead are the six criteria air pollutants originally identified by the EPA. Since adoption of 1970 Act, subsets of PM have been identified for which permissible levels have been established. These include PM of 10 microns in diameter or less (PM_{10}) and PM of 2.5 microns in diameter or less ($PM_{2.5}$).

The BAAQMD is the regional agency with jurisdiction for regulating air quality within the nine-county SFBAAB. The region's air quality monitoring network provides information on ambient concentrations of criteria air pollutants at various locations in the San Francisco Bay Area. Table 4.G.1: Summary of San Francisco Air Quality Monitoring Data (2011-2015), presents a

[3] Western Regional Climate Center, Website query, Prevailing Wind Direction in California. Available online at http://www.wrcc.dri.edu/htmlfiles/westwinddir.html#CALIFORNIA. Accessed November 19, 2015.

Table 4.G.1: Summary of San Francisco Air Quality Monitoring Data (2011-2015)

Pollutant	Most Stringent Applicable Standard	Number of Days Standards Were Exceeded and Maximum Concentrations Measured[a]				
		2011	2012	2013	2014	2015
Ozone						
Maximum 1-Hour Concentration (ppm)	>0.09[b]	0.070	0.069	0.069	0.079	0.085
Days 1-Hour Standard Exceeded		0	0	0	0	0
Maximum 8-Hour Concentration (ppm)	>0.070[c]	0.054	0.048	0.059	0.069	0.067
Days 8-Hour Standard Exceeded		0	0	0	0	0
Carbon Monoxide (CO)						
Maximum 1-Hour Concentration (ppm)	>20[b]	1.8	2.0	1.8	1.6	1.8
Days 1-Hour Standard Exceeded		0	0	0	0	0
Maximum 8-Hour Concentration (ppm)	>9.0[b]	1.2	1.2	1.4	1.2	1.3
Days 8-Hour Standard Exceeded		0	0	0	0	0
Suspended Particulates (PM_{10})						
Maximum 24-Hour Concentration ($\mu g/m^3$)	>50 [b]	46	**51**	44	36	47
Days 24-Hour Standard Exceeded[d]		0	1	0	0	0
Suspended Particulates ($PM_{2.5}$)						
Maximum 24-Hour Concentration ($\mu g/m^3$)	>35 [c]	**48**	**36**	**49**	**33**	**35**
Days 24-Hour Standard Exceeded[d]		2	1	2	0	0
Annual Average ($\mu g/m^3$)	>12 [b, c]	9.5	8.2	10.1	7.7	9.6
Nitrogen Dioxide (NO_2)						
Maximum 1-Hour Concentration (ppm)	>0.100 [c]	0.09	**0.12**	0.07	0.08	0.07
Days 1-Hour Standard Exceeded		0	1	0	0	0

Notes:

Bold values are in excess of applicable standard.

ppm = parts per million.

$\mu g/m^3$ = micrograms per cubic meter.

a Number of days exceeded is for all days in a given year, except for PM. PM_{10} was monitored every 6 days prior to 2013 and has been monitored every 12 days effective January 2013.

b State standard, not to be exceeded.

c Federal standard, not to be exceeded.

d Based on a sampling schedule of 1 out of every 6 days or every 12 days, for a total of approximately 60 samples per year for 2011 and 2012, and 30 samples per year for 2013, 2014, and 2015.

Source: BAAQMD, Bay Area Air Pollution Summary, 2011 – 2015. Available online at http://www.baaqmd.gov/about-air-quality/air-quality-summaries. Accessed April 21, 2016.

5-year summary for 2011 to 2015 of the highest annual criteria air pollutant concentrations, recorded at the air quality monitoring station operated and maintained by the BAAQMD at 16th and Arkansas streets (Potrero Hill), approximately 1 mile northwest of the project site. Table 4.G.1 also compares measured pollutant concentrations with the most stringent applicable ambient air quality standards (State or Federal). These concentrations are health-based standards established with an ample margin of safety. For determining attainment with air quality standards, exceedances are assessed on a region-wide basis. Concentrations shown in bold indicate only a localized exceedance of the standard.

Ozone

Ozone is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG, also sometimes referred to as volatile organic compounds or VOCs by some regulatory agencies) and oxides of nitrogen (NOx) in the presence of sunlight. The main sources of ROG and NOx, often referred to as ozone precursors, are combustion processes (including motor vehicle engines) and the evaporation of solvents, paints, and fuels. In the Bay Area, automobiles are the single largest source of ozone precursors. Ozone is referred to as a regional air pollutant because its precursors are transported and diffused by wind concurrently with ozone production through the photochemical reaction process. Ozone causes eye irritation, airway constriction, and shortness of breath and can aggravate existing respiratory diseases, such as asthma, bronchitis, and emphysema.

According to published data, and as shown in Table 4.G.1, p. 4.G.3, above, the most stringent applicable standards for ozone (State 1-hour standard of 0.09 parts per million [ppm] and the Federal 8-hour standard of 0.075 ppm) were not exceeded in San Francisco between 2011 and 2015. In 2015, the EPA strengthened the 8-hour ozone standard to 0.070 ppm, and the new standard became effective December 28, 2015.

Carbon Monoxide

CO is an odorless, colorless gas usually formed as the result of the incomplete combustion of fuels. The single largest source of CO is motor vehicles; the highest emissions occur during low travel speeds, stop-and-go driving, cold starts, and hard acceleration. Exposure to high concentrations of CO reduces the oxygen-carrying capacity of the blood and can cause headaches, nausea, dizziness, and fatigue; impair central nervous system function; and induce angina (chest pain) in persons with serious heart disease. Very high levels of CO can be fatal. As shown in Table 4.G.1, the more stringent State CO standards were not exceeded between 2011 and 2015. Measurements of CO indicate hourly maximums ranging between 8 and 10 percent of the more stringent State standard, and maximum 8-hour CO levels that are approximately 13 to 16 percent of the allowable 8-hour standard.

Particulate Matter

Particulate matter is a class of air pollutants that consists of heterogeneous solid and liquid airborne particles from human-made and natural sources. Particulate matter is measured in two size ranges: PM_{10} and $PM_{2.5}$. In the Bay Area, motor vehicles generate about one-half of the SFBAAB's particulates, through tailpipe emissions as well as brake pad and tire wear. Wood burning in fireplaces and stoves, industrial facilities, and ground-disturbing activities such as construction are other sources of such fine particulates. These fine particulates are small enough to be inhaled into the deepest parts of the human lung and can cause adverse health effects. According to the CARB, studies in the United States and elsewhere "have demonstrated a strong link between elevated particulate levels and premature deaths, hospital admissions, emergency room visits, and asthma attacks," and studies of children's health in California have demonstrated that particle pollution "may significantly reduce lung function growth in children."[4] The CARB also reports that statewide attainment of PM standards could prevent thousands of premature deaths, lower hospital admissions for cardiovascular and respiratory disease and asthma-related emergency room visits, and avoid hundreds of thousands of episodes of respiratory illness in California.[5] Among the criteria pollutants that are regulated, particulates appear to represent a serious ongoing health hazard. As long ago as 1999, the BAAQMD was reporting, in its *CEQA Air Quality Guidelines*, that studies had shown that elevated particulate levels contribute to the death of approximately 200 to 500 people per year in the Bay Area. $PM_{2.5}$ is of particular concern because epidemiologic studies have demonstrated that people who live near freeways, especially people who live within 500 feet of freeways or high-traffic roadways, have poorer health outcomes, including increased asthma symptoms and respiratory infections and decreased pulmonary function and lung development in children.[6]

As presented above in Table 4.G.1, the State 24-hour PM_{10} standard was exceeded on one monitored occasion between 2011 and 2015 in San Francisco. It is estimated that the State 24-hour PM_{10} standard of 50 micrograms per cubic meter ($\mu g/m^3$) was exceeded on up to 6 days per year between 2011 and 2015.[7] The State 24-hour $PM_{2.5}$ standard was exceeded on five monitored occasions between 2011 and 2015.[6] The Federal and State annual average standards were not exceeded between 2011 and 2015.

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[4] CARB, *Recent Research Findings: Health Effects of Particulate Matter and Ozone Air Pollution*, November 2007, p.1.

[5] Ibid.

[6] San Francisco Department of Public Health, *Assessment and Mitigation of Air Pollutant Health Effect from Intra-urban Roadways: Guidance for Land Use Planning and Environmental Review*, May 2008, p. 7.

[7] PM_{10} was sampled every sixth day prior to 2013; therefore, actual days over the standard can be estimated to be six times the numbers listed in the table. $PM_{2.5}$ is continuously monitored.

Nitrogen Dioxide

NO_2 is a reddish brown gas that is a byproduct of combustion processes. Automobiles and industrial operations are the main sources of NO_2. Aside from its contribution to ozone formation, NO_2 can increase the risk of acute and chronic respiratory disease and reduce visibility. NO_2 may be visible as a coloring component of the air on high pollution days, especially in conjunction with high ozone levels. The current State 1-hour standard for NO_2 (0.18 ppm) is being met in San Francisco. In 2010, the EPA implemented a new 1-hour NO_2 standard (0.10 ppm), which is presented in Table 4.G.2: State and Federal Ambient Air Quality Standards and Attainment Status for the San Francisco Bay Area Air Basin, below. Currently, the CARB is recommending that the SFBAAB be designated as an attainment area for the new standard.[8] As shown in Table 4.G.1, p. 4.G.3, this new Federal standard was exceeded on 1 day at the San Francisco station between 2011 and 2015.

The EPA has also established requirements for a new monitoring network to measure NO_2 concentrations near major roadways in urban areas with a population of 500,000 or more. Sixteen new near-roadway monitoring sites are required in California, three of which will be in the Bay Area. These monitors are planned for Berkeley, Oakland, and San Jose. The Oakland station commenced operation in February 2014, and the San Jose station commenced operation in March 2015; the Berkeley station is not yet operational. The new monitoring data may result in a need to change area designations in the future. The CARB will revise the area designation recommendations, as appropriate, once the new monitoring data become available.

Sulfur Dioxide

SO_2 is a colorless, acidic gas with a strong odor. It is produced by the combustion of sulfur-containing fuels such as oil, coal, and diesel. SO_2 has the potential to damage materials and can cause health effects at high concentrations. It can irritate lung tissue and increase the risk of acute and chronic respiratory disease.[9] Pollutant trends suggest that the SFBAAB currently meets and will continue to meet the State standard for SO_2 for the foreseeable future.

In 2010, the EPA implemented a new 1-hour SO_2 standard, which is presented in Table 4.G.2. The EPA initially designated the SFBAAB as an attainment area for SO_2. Similar to the new Federal standard for NO_2, the EPA established requirements for a new monitoring network to

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[8] CARB, Recommended Area Designations for the 2010 Nitrogen Dioxide Standards, Technical Support Document, January 2011. Available online at http://www.airquality.org/plans/federal/no2/NO2Enclosure_1.pdf. Accessed January 19, 2016.

[9] BAAQMD, *CEQA Air Quality Guidelines*, May 2011. Available online at http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/BAAQMD%20CEQA%20Guidelines%20May%202011.ashx; p. C-16. Accessed January 19, 2016.

measure SO_2 concentrations beginning in January 2013.[10] No additional SO_2 monitors are required for the Bay Area, because the BAAQMD jurisdiction has never been designated as non-attainment for SO_2 and no State implementation plans or maintenance plans have been prepared for SO_2.[11]

Lead

Leaded gasoline (phased out in the United States beginning in 1973), paint (on older houses, cars), smelters (metal refineries), and manufacture of lead storage batteries have been the primary sources of lead released into the atmosphere. Lead has a range of adverse neurotoxic health effects, which put children at special risk. Some lead-containing chemicals cause cancer in animals. Lead levels in the air have decreased substantially since leaded gasoline was eliminated.

Ambient lead concentrations are only monitored on an as-warranted, site-specific basis in California. On October 15, 2008, the EPA strengthened the national ambient air quality standard for lead by lowering it from 1.50 $\mu g/m^3$ to 0.15 $\mu g/m^3$ on a rolling 3-month average. The EPA revised the monitoring requirements for lead in December 2010.[12] These requirements focus on airports and large urban areas resulting in an increase in 76 monitors nationally. Lead monitoring stations in the Bay Area are located at Palo Alto Airport, Reid-Hillview Airport (San Jose), and San Carlos Airport. Non-airport locations for lead monitoring are in Redwood City and San Jose.

Air Quality Index

The EPA developed the Air Quality Index (AQI) scale to make the public health impacts of air pollution concentrations easily understandable. The AQI, much like an air quality "thermometer," translates daily air pollution concentrations into a number on a scale between 0 and 500. The numbers in the scale are divided into six color-coded ranges, with numbers 0 through 300 as outlined below.

[10] U.S. EPA Fact Sheet: Revisions to the Primary National Ambient Air Quality Standard, Monitoring Network, and Data Reporting Requirements for Sulfur Dioxide, June 2, 2010. Available online at http://www3.epa.gov/airquality/sulfurdioxide/pdfs/20100602fs.pdf. Accessed January 19, 2016.

[11] BAAQMD, *2013 Air Monitoring Network Plan*, July 2014. Available online at http://www.baaqmd.gov/~/media/Files/Technical%20Services/2013_Network_Plan.ashx?la=en; p. 27. Accessed January 19, 2016.

[12] U.S. EPA *Fact Sheet Revisions to Lead Ambient Air Quality Monitoring Requirements*. Available online at http://www3.epa.gov/airquality/lead/pdfs/Leadmonitoring_FS.pdf. Accessed January 19, 2016.

Table 4.G.2: State and Federal Ambient Air Quality Standards and Attainment Status for the San Francisco Bay Area Air Basin

Pollutant	Averaging Time	State (SAAQS[a])		Federal (NAAQS[b])	
		Standard	Attainment Status	Standard	Attainment Status
Ozone	1-hour	0.09 ppm	**N**	NA	See Note c
	8-hour	0.070 ppm	**N**	0.070 ppm[d]	**N**/Marginal
Carbon Monoxide (CO)	1-hour	20 ppm	A	35 ppm	A
	8-hour	9 ppm	A	9 ppm	A
Nitrogen Dioxide (NO_2)	1-hour	0.18 ppm	A	0.100 ppm	U
	Annual	0.030 ppm	NA	0.053 ppm	A
Sulfur Dioxide (SO_2)	1-hour	0.25 ppm	A	0.075 ppm	A
	24-hour	0.04 ppm	A	0.14 ppm	A
	Annual	NA	NA	0.03 ppm	A
Particulate Matter (PM_{10})	24-hour	50 µg/m^3	**N**	150 µg/m^3	U
	Annual[e]	20 µg/m^3 [f]	**N**	NA	NA
Fine Particulate Matter ($PM_{2.5}$)	24-hour	NA	NA	35 µg/m^3	**N**
	Annual	12 µg/m^3	**N**	12 µg/m^3	U/A
Sulfates	24-hour	25 µg/m^3	A	NA	NA
Lead	30-day	1.5 µg/m^3	A	NA	NA
	Cal. Quarter	NA	NA	1.5 µg/m^3	A
	Rolling 3-month average	NA	NA	0.15	U
Hydrogen Sulfide	1-hour	0.03 ppm	U	NA	NA
Visibility-Reducing Particles	8-hour	See Note g	U	NA	NA

Notes:

A = Attainment; **N** = Non-attainment; U = Unclassified; NA = Not Applicable, no applicable standard; ppm = parts per million; µg/m^3 = micrograms per cubic meter.

a SAAQS = state ambient air quality standards (California). SAAQS for ozone, CO (except Lake Tahoe), SO_2 (1-hour and 24-hour), NO_2, PM, and visibility-reducing particles are values that are not to be exceeded. All other state standards shown are values not to be equaled or exceeded.

b NAAQS = national ambient air quality standards. NAAQS, other than ozone and particulates, and those based on annual averages or annual arithmetic means, are not to be exceeded more than once a year. The 8-hour ozone standard is attained when the 3-year average of the fourth highest daily concentration is 0.08 ppm or less. The 24-hour PM_{10} standard is attained when the 3-year average of the 99th percentile of monitored concentrations is less than the standard. The 24-hour $PM_{2.5}$ standard is attained when the 3-year average of the 98th percentile is less than the standard.

c The U.S. Environmental Protection Agency (EPA) revoked the national 1-hour ozone standard on June 15, 2005.

d This Federal 8-hour ozone standard was approved by EPA in October 2015 and became effective on December 28, 2015.

e State standard = annual geometric mean; national standard = annual arithmetic mean.

f In June 2002, the CARB established new annual standards for $PM_{2.5}$ and PM_{10}.

g Statewide visibility-reducing particle standard (except Lake Tahoe Air Basin): Particles in sufficient amount to produce an extinction coefficient of 0.23 per kilometer when the relative humidity is less than 70 percent. This standard is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range.

Sources: BAAQMD, Standards and Attainment Status, 2015. Available online at http://www.baaqmd.gov/research-and-data/air-quality-standards-and-attainment-status. Accessed January 19, 2016.

U.S. EPA National Ambient Air Quality Standards, 2012. Available online at http://www3.epa.gov/ttn/naaqs/criteria.html. Accessed January 19, 2016.

- Green (0-50) indicates "good" air quality. No health impacts are expected when air quality is in the green range.
- Yellow (51-100) indicates air quality is "moderate." Unusually sensitive people should consider limited prolonged outdoor exertion.
- Orange (101-150) indicates air quality is "unhealthy for sensitive groups." Active children and adults, and people with respiratory disease, such as asthma, should limit outdoor exertion.
- Red (151-200) indicates air quality is "unhealthy." Active children and adults, and people with respiratory disease, such as asthma, should avoid prolonged outdoor exertion; everyone else, especially children, should limit prolonged outdoor exertion.
- Purple (201-300) indicates air quality is "very unhealthy." Active children and adults, and people with respiratory disease, such as asthma, should avoid prolonged outdoor exertion; everyone else, especially children, should limit outdoor exertion.

The AQI numbers refer to specific amounts of pollution in the air. They are based on the Federal air quality standards for ozone, CO, NO_2, SO_2, PM_{10}, and $PM_{2.5}$. In most cases, the Federal standard for these air pollutants corresponds to the number 100 on the AQI chart. If the concentration of any of these pollutants rises above its respective standard, the air quality can be unhealthy for the public. In determining the air quality forecast, local air districts, including the BAAQMD, use the anticipated concentration measurements for each of the major pollutants, convert them into AQI numbers, and determine the highest AQI for each zone in a district.

Readings below 100 on the AQI scale would not typically affect the health of the general public (although readings in the moderate range of 50 to 100 may affect unusually sensitive people). Levels above 300 rarely occur in the United States, and readings above 200 have not occurred in the Bay Area in decades.[13] AQI statistics over recent years indicate that air quality in the Bay Area is predominantly in the "Good" or Moderate" categories and healthy on most days for most people. Historical BAAQMD data indicate that the SFBAAB experienced air quality in the Red level (unhealthy) on 3 days between the years 2010 and 2014. As shown in Table 4.G.3: Air Quality Index Statistics for the San Francisco Bay Area Air Basin, the SFBAAB had a total of 14 Orange-level (unhealthy for sensitive groups) days in 2010, 12 days in 2011, 8 days in 2012, 15 days in 2013, and 11 days in 2014.

[13] BAAQMD, 2014. Available online at sparetheair.org/Stay-Informed/Todays-Air-Quality/Air-Quality-Index.aspx. Accessed January 19, 2016.

Table 4.G.3: Air Quality Index Statistics for the San Francisco Bay Area Air Basin

AQI Statistics for San Francisco Bay Area Air Basin	Number of Days by Year				
	2010	2011	2012	2013	2014
Unhealthy for Sensitive Groups (Orange)	14	12	8	15	11
Unhealthy (Red)	1	0	0	1	1

Source: BAAQMD, 2016

TOXIC AIR CONTAMINANTS AND LOCAL HEALTH RISKS AND HAZARDS

In addition to criteria air pollutants, individual projects may emit toxic air contaminants (TACs). TACs collectively refer to a diverse group of air pollutants that are capable of causing chronic (i.e., of long duration) and acute (i.e., severe but short-term) adverse effects to human health, including carcinogenic effects. Human health effects of TACs include birth defects, neurological damage, cancer, and death. There are hundreds of different types of TACs with varying degrees of toxicity. Individual TACs vary greatly in the health risk they present; at a given level of exposure, one TAC may pose a hazard that is many times greater than another.

Unlike criteria air pollutants, TACs are not subject to ambient air quality standards but are regulated by the BAAQMD using a risk-based approach to determine which sources and pollutants to control as well as the degree of control. A health risk assessment (HRA) is an analysis which estimates human health exposure to toxic substances, and when considered together with information regarding the toxic potency of the substances, provides quantitative estimates of health risks.[14]

Exposures to fine PM ($PM_{2.5}$) are strongly associated with mortality, respiratory diseases, and lung development in children, and other end results, such as hospitalization for cardiopulmonary disease.[15] In addition to $PM_{2.5}$, diesel PM (DPM), a byproduct of diesel fuel combustion, is also of concern. The CARB identified DPM as a TAC in 1998, primarily based on evidence demonstrating cancer effects in humans.[16] The estimated cancer risk from exposure to diesel exhaust is much higher than the risk associated with any other TAC routinely measured in the region.

[14] In general, a health risk assessment is required if the BAAQMD concludes that projected emissions of a specific air toxic compound from a proposed new or modified source suggest a potential public health risk. The applicant is then subject to a health risk assessment for the source in question. Such an assessment generally evaluates chronic, long-term effects, estimating the increased risk of cancer as a result of exposure to one or more TACs.

[15] SFDPH, *Assessment and Mitigation of Air Pollutant Health Effects from Intra-Urban Roadways: Guidance for Land Use Planning and Environmental Review*, May 2008.

[16] CARB, Fact Sheet, "The Toxic Air Contaminant Identification Process: Toxic Air Contaminant Emissions from Diesel-fueled Engines," October 1998.

San Francisco Modeling of Air Pollution Exposure Zones

In an effort to identify areas of San Francisco most adversely affected by sources of TACs, San Francisco partnered with the BAAQMD to inventory and assess air pollution and exposures from vehicles, stationary sources, and area sources within San Francisco. Citywide dispersion modeling was conducted using AERMOD[17] to assess the emissions from the following primary sources: vehicles on local roadways, permitted stationary sources, port and maritime sources, and Caltrain. Emissions of PM_{10} (DPM is assumed equivalent to PM_{10}), $PM_{2.5}$, and total organic gases (TOG) were modeled on a 20 × 20–meter receptor grid covering the entire City. The citywide modeling results represent a comprehensive assessment of existing cumulative exposures to air pollution throughout the City. The methodology and technical documentation for modeling citywide air pollution is available in the document entitled, *The San Francisco Community Risk Reduction Plan: Technical Support Documentation*.[18]

Model results were used to identify areas in the City with poor air quality, termed Air Pollutant Exposure Zones (APEZ), based on the following health-protective criteria: (1) cumulative $PM_{2.5}$ concentrations greater than 10 $\mu g/m^3$; and/or (2) excess cancer risk from the contribution of emissions from all modeled sources greater than 100 per one million persons exposed.

An additional health vulnerability layer was incorporated in the APEZ for those San Francisco ZIP codes in the worst quintile of Bay Area Health Vulnerability scores (ZIP Codes 94102, 94103, 94105, 94124, and 94130). In these areas, the standard for identifying areas as being within the zone were lowered to: (1) excess cancer risk from the contribution of emissions from all modeled sources greater than 90 per one million persons exposed; and/or (2) cumulative $PM_{2.5}$ concentrations greater than 9 $\mu g/m^3$.

Lastly, all parcels within 500 feet of a major freeway were also included in the APEZ, consistent with findings in CARB's *Air Quality and Land Use Handbook: A Community Health Perspective*, which suggests air pollutant levels decrease substantially at approximately 500 feet from a freeway.[19]

Citywide modeling results identified the project site as within an APEZ. However, this designation reflects an incorrect assumption that BAE Systems (a permitted stationary source

[17] AERMOD is the EPA's preferred or recommended steady state air dispersion plume model. For more information on AERMOD and to download the AERMOD Implementation Guide see www.epa.gov/ttn/scram/dispersion_prefrec.htm#aermod (accessed November 20, 2015).

[18] BAAQMD, San Francisco Department of Public Health, and San Francisco Planning Department, *The San Francisco Community Risk Reduction Plan: Technical Support Documentation*, December 2012.

[19] CARB, *Air Quality and Land Use Handbook: A Community Health Perspective*, April 2005. Available online at http://www.arb.ca.gov/ch/handbook.pdf. Accessed November 20, 2015.

operator) is within the project site, rather than north of the project site where it is currently located. Revised modeling was conducted in consultation with BAAQMD to reassess cancer risk and $PM_{2.5}$ concentrations within the project area and its environs. This updated modeling demonstrated that the Proposed Project site is not located in an areas that meet the APEZ criteria.

Fine Particulate Matter

In April 2011, the EPA published *Policy Assessment for the Particulate Matter Review of the National Ambient Air Quality Standards*. In this document, EPA staff concludes that the then-current Federal annual $PM_{2.5}$ standard of 15 $\mu g/m^3$ should be revised to a level within the range of 13 to 11 $\mu g/m^3$, with evidence strongly supporting a standard within the range of 12 to 11 $\mu g/m^3$. APEZs for San Francisco are based on the health protective $PM_{2.5}$ standard of 11 $\mu g/m^3$, as supported by the EPA's Particulate Matter Policy Assessment, although lowered to 10 $\mu g/m^3$ to account for uncertainty in accurately predicting air pollutant concentrations using emissions modeling programs.

Excess Cancer Risk

The 100 per one million persons exposed (100 excess cancer risk) criterion discussed above in the "San Francisco Modeling of Air Pollution Exposure Zones" section, pp. 4.G.11-4.G.12, is based on EPA guidance for conducting air toxic analyses and making risk management decisions at the facility and community-scale level.[20] As described by the BAAQMD, the EPA considers a cancer risk of 100 per one million or less to be within the "acceptable" range of cancer risk. Furthermore, in the 1989 preamble to the benzene National Emissions Standards for Hazardous Air Pollutants (NESHAP) rulemaking,[21] the EPA states that it "…strives to provide maximum feasible protection against risks to health from hazardous air pollutants by (1) protecting the greatest number of persons possible to an individual lifetime risk level no higher than approximately one in one million and (2) limiting to no higher than approximately one in ten thousand [100 in one million] the estimated risk that a person living near a plant would have if he or she were exposed to the maximum pollutant concentrations for 70 years." The 100 per one million excess cancer cases is also consistent with the ambient cancer risk in the most pristine portions of the Bay Area based on BAAQMD regional modeling.[22]

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[20] BAAQMD, *Revised Draft Options and Justification Report, California Environmental Quality Act Thresholds of Significance*, October 2009, p. 67. Available online at http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/revised-draft-ceqa-thresholds-justification-report-oct-2009.pdf?la=en. Accessed February 6, 2016.

[21] 54 *Federal Register* 38044, September 14, 1989.

[22] BAAQMD, *Revised Draft Options and Justification Report, California Environmental Quality Act Thresholds of Significance*, October 2009, p. 67.

In addition to monitoring criteria pollutants, both the BAAQMD and CARB operate TAC monitoring networks in the SFBAAB. These stations measure 10 to 15 TACs, depending on the specific station. The TACs selected for monitoring are those that traditionally have been found in the highest concentrations in ambient air and therefore tend to produce the most significant risk. The nearest BAAQMD ambient TAC monitoring station to the project area is the station at 10 Arkansas Street in San Francisco. The ambient concentrations of carcinogenic TACs measured at the Arkansas Street station, approximately 0.5 mile west of the project site, are presented in Table 4.G.4: 2015 Annual Average Ambient Concentrations of Carcinogenic Toxic Air Contaminants Measured at BAAQMD Monitoring Station, 10 Arkansas Street, San Francisco. The estimated cancer risk from a lifetime exposure (70 years) to these substances is also reported in the table. When TAC measurements at this station are compared to ambient concentrations of various TACs for the Bay Area as a whole, the cancer risks associated with mean TAC concentrations in San Francisco are similar to those for the Bay Area as a whole. Therefore, the estimated average lifetime cancer risk resulting from exposure to TAC concentrations monitored at the San Francisco station do not appear to be any greater than for the Bay Area as a region.

Roadway-Related Pollutants

Motor vehicles are responsible for a large share of air pollution, especially in California. Vehicle tailpipe emissions contain diverse forms of particles and gases, and vehicles also contribute to particulates by generating road dust through tire wear. Epidemiologic studies have demonstrated that people living close to freeways or busy roadways have poorer health outcomes, including increased asthma symptoms and respiratory infections, and decreased pulmonary function and lung development in children. Air pollution monitoring conducted in conjunction with epidemiologic studies has confirmed that roadway-related health effects vary with modeled exposure to PM and NO_2. In traffic-related studies, the additional non-cancer health risk attributable to roadway proximity was seen within 1,000 feet of the roadway and was strongest within 300 feet.[23] As a result, the CARB recommends that new sensitive land uses not be located within 500 feet of a freeway or urban roads carrying 100,000 vehicles per day.

Diesel Particulate Matter

The CARB identified DPM as a TAC in 1998, primarily based on evidence demonstrating cancer effects in humans. The exhaust from diesel engines includes hundreds of different gaseous and particulate components, many of which are toxic. Mobile sources such as trucks and buses are among the primary sources of diesel emissions, and concentrations of DPM are higher near

[23] CARB, *Air Quality and Land Use Handbook: A Community Health Perspective*, April 2005. Available online at http://www.arb.ca.gov/ch/handbook.pdf. Accessed October 22, 2015.

Table 4.G.4: 2015 Annual Average Ambient Concentrations of Carcinogenic Toxic Air Contaminants Measured at BAAQMD Monitoring Station, 10 Arkansas Street, San Francisco

Substance	Concentration	Cancer Risk per Million[a]
Gaseous TACs (ppb)		
Acetaldehyde	0.50[b]	2[b]
Benzene	0.20	18
1,3-Butadiene	0.038	14
Carbon Tetrachloride	0.094	25
Formaldehyde	1.28[b]	9[b]
Perchloroethylene	0.015	0.6
Methylene Chloride	0.127	0.4
Chloroform	0.030	0.8
Trichloroethylene	0.012	0.1
Particulate TACs (ng/m^3)		
Chromium (Hexavalent)	0.078	12
Total Risk for All TACs		**81.9**

Notes:

TACs = toxic air contaminants; BAAQMD = Bay Area Air Quality Management District; ppb = part per billion; ng/m^3 = nanograms per cubic meter.

[a] Cancer risks were estimated by applying published unit risk values to the measured concentrations.

[b] Year 2014 data, as 2015 data not available for these TACs.

Source: CARB, Ambient Air Toxics Summary-2013. Available online at: http://www.arb.ca.gov/adam/toxics/sitesubstance.html. Accessed October 22, 2015.

heavily traveled highways. The CARB estimated that the average Bay Area cancer risk from exposure to DPM, based on a population-weighted average ambient DPM concentration, is approximately 480 in one million, as of 2000, which is much higher than the risk associated with any other toxic air pollutant routinely measured in the region. The statewide risk from DPM as determined by the CARB declined from 750 in one million in 1990 to 570 in one million in 1995; by 2000, CARB estimated the average statewide cancer risk from DPM at 540 in one million.[24,25]

[24] CARB, *California Almanac of Emissions and Air Quality - 2009 Edition*, Table 5-44 and Figure 5-12. Available online at http://www.arb.ca.gov/aqd/almanac/almanac09/chap509.htm. Accessed October 22, 2015.

In 2000, the CARB approved a comprehensive Diesel Risk Reduction Plan to reduce diesel emissions from both new and existing diesel-fueled vehicles and engines. Subsequent CARB regulations apply to new trucks and diesel fuel. With new controls and fuel requirements, 60 trucks built in 2007 would have the same particulate exhaust emissions as one truck built in 1988.[26] The regulation is anticipated to result in an 80 percent decrease in statewide diesel health risk in 2020 as compared with the diesel risk in 2000. Despite notable emission reductions, the CARB recommends that proximity to sources of DPM emissions be considered in the siting of new sensitive land uses. The CARB notes that these recommendations are advisory and should not be interpreted as defined "buffer zones," and that local agencies must balance other considerations, including transportation needs, the benefits of urban infill, community economic development priorities, and other quality of life issues. With careful evaluation of exposure, health risks, and affirmative steps to reduce risk where necessary, the CARB's position is that infill development, mixed use, higher density, transit-oriented development, and other concepts that benefit regional air quality can be compatible with protecting the health of individuals at the neighborhood level.[27]

SENSITIVE RECEPTORS

Air quality does not affect every individual in the population in the same way, and some groups are more sensitive to adverse health effects than others. Population subgroups sensitive to the health effects of air pollutants include the elderly and the young; population subgroups with higher rates of respiratory disease, such as asthma and chronic obstructive pulmonary disease; and populations with other environmental or occupational health exposures (e.g., indoor air quality) that affect cardiovascular or respiratory diseases. The BAAQMD defines sensitive receptors as children, adults, and seniors occupying or residing in residential dwellings, schools, day care centers, hospitals, and senior-care facilities. Workers are not considered sensitive receptors because all employers must follow regulations set forth by the Occupation Safety and Health Administration (OSHA) to ensure the health and well-being of their employees.[28]

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[25] This calculated cancer risk value from ambient air exposure in the Bay Area can be compared against the lifetime probability of being diagnosed with cancer in the United States, from all causes, which for men is more than 40 percent (based on a sampling of 17 regions nationwide), or greater than 400,000 in one million, according to the American Cancer Society. (American Cancer Society, last revised October. 1, 2014, available online at http://www.cancer.org/cancer/cancerbasics/lifetime-probability-of-developing-or-dying-from-cancer.)

[26] Pollution Engineering, *New Clean Diesel Fuel Rules Start*. July, 2006.

[27] CARB, *Air Quality and Land Use Handbook: A Community Health Perspective*, April 2005. Available online at http://www.arb.ca.gov/ch/handbook.pdf. Accessed October 22, 2015.

[28] BAAQMD, *Recommended Methods for Screening and Modeling Local Risks and Hazards*, May 2011, p. 12.

The proximity of sensitive receptors to motor vehicles is an air pollution concern, especially in San Francisco where building setbacks are limited and roadway volumes are hig5her than most other parts of the Bay Area. Vehicles also contribute to particulates by generating road dust and through tire wear.

Existing receptors evaluated in this analysis include a representative sample of known residents (child and adult) in the surrounding neighborhood, and other sensitive receptors (school children, hospital/nursing home patients, etc.) located in the surrounding community and along the expected travel routes of the on-road delivery and haul trucks. For a list of sensitive receptors within 900 feet of the project site, refer to Table 4.F.4: Sensitive Receptors in the Project Vicinity, in Section 4.F, Noise, p. 4.F.15. The health risk impact analysis also includes receptor locations out to a distance of 1,000 meters from the project site, consistent with citywide modeling. In addition to the residential receptors, there are four schools and a daycare within 900 feet of the project site were identified: Dogpatch Alterntaive School (site 2), Potrero Kids Daycare, Dogpatch Alternative School (Site 1), La Picola Scuola Italiana, and Friends of Potrero Hill Nursery School.

The project site in not located within an area that meets the APEZ criteria. Background cancer risk values on the project site are between 21 and 44 in one million, with background values ranging from 0 to 265 in one million within 1,000 meters of the site.[29] Background $PM_{2.5}$ concentrations range from 8.3 to 8.8 $\mu g/m^3$ on the project site, with background values varying between 0 and 11 $\mu g/m^3$ within 1,000 meters of the site. The nearest off-site receptors within an APEZ are located approximately 900 feet to the west and are thus designated due to the proximity of Interstate 280.

EXISTING STATIONARY SOURCES OF AIR POLLUTION

The BAAQMD's inventory of permitted stationary sources of emissions shows eight permitted stationary emission facilities present within or near the 1,000-foot zone of influence[30] of the project site. The sources at these permitted facilities include printers, stationary diesel engines for power generators, a gas station, and the now decommissioned Potrero Power Plant (which was removed from the City's baseline model as part of this analysis). The BAE Systems ship repair facility north of the project site operates diesel-fired electric generators to maintain power for ships while at dry dock and also conducts sandblasting activities. The diesel generators generate

[29] Environmental Science Associates, Pier 70 Mixed Use District Project Air Quality Technical Report, December 2016.

[30] For assessing community risks and hazards, an area of influence of 1,000-foot radius is recommended around the project property boundary. BAAQMD recommends that any proposed project that includes the siting of a new source or receptor assess associated impacts within 1,000 feet, taking into account both individual and nearby cumulative sources. As explained above, the HRA evaluated sources within a larger area of 1,000 meters.

DPM emissions. The sandblasting generates $PM_{2.5}$ emissions. As a consequence, citywide modeling indicates background $PM_{2.5}$ concentrations of up to 9.5 $\mu g/m^3$ in the project vicinity.

MAJOR ROADWAYS CONTRIBUTING TO AIR POLLUTION

Third Street, 16th Street, Mariposa Street, 25th Street, and Cesar Chavez Street are arterial roadways in the existing local roadway system within 1,000 meters of the project site that carry at least 10,000 vehicles in annual average daily traffic based on the City's SF CHAMP roadway model.[31] This traffic contributes to concentrations of $PM_{2.5}$, DPM, and other air contaminants emitted from motor vehicles near the street level. Both Interstate 280 and the Caltrain rail line are also located within 1,000 meters from the project site. Aside from the surrounding major roadways, the only other areas of mobile-source activity or otherwise "non-permitted" sources (e.g., railyards, trucking distribution facilities, and high-volume fueling stations) located within 1,000 meters of the project site would be SF MUNI Woods Division storage and maintenance yards located at 22nd and Indiana streets and the Islais Creek Motor Coach Maintenance and Operations Facility at Cesar Chavez and Illinois streets.

REGULATORY FRAMEWORK

FEDERAL REGULATIONS

The 1970 Clean Air Act (last amended in 1990) requires that regional planning and air pollution control agencies prepare a regional air quality plan to outline the measures by which both stationary and mobile sources of pollutants are planned to be controlled in order to achieve all standards by the deadlines specified in the act. These ambient air quality standards are intended to protect the public health and welfare, and they specify the concentration of pollutants (with an ample margin of safety) to which the public can be exposed without adverse health effects. They are designed in consideration of those segments of the public most susceptible to respiratory distress, including asthmatics, the very young, the elderly, people weak from other illness or disease, or persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollution levels that are somewhat above ambient air quality standards without observing adverse health effects.

The current attainment status for the SFBAAB, with respect to Federal standards, is summarized above in Table 4.G.2, p. 4.G.9. In general, the SFBAAB experiences low concentrations of most pollutants when compared to Federal standards, except for ozone and PM (PM_{10} and $PM_{2.5}$), for which standards are exceeded periodically (see Table 4.G.1, p. 4.G.3).

[31] San Francisco Metropolitan Transportation Agency, Chained Activity Modeling Process version 4.3.0, Average Daily Traffic Volumes, provided to ESA, August 2, 2012.

STATE REGULATIONS

California Clean Air Act

Although the Federal Clean Air Act established national ambient air quality standards, individual states retained the option to adopt more stringent standards and to include other pollution sources. California had already established its own air quality standards when Federal standards were established, and because of the unique meteorological problems in California, there is considerable diversity between the State and national ambient air quality standards, as shown in Table 4.G.2, p. 4.G.8. California ambient standards are at least as protective as national ambient standards and are often more stringent.

In 1988, California passed the California Clean Air Act (California Health and Safety Code Sections 39600 et seq.), which, like its Federal counterpart, required the designation of areas as attainment or non-attainment, but based these designations on State ambient air quality standards rather than the Federal standards. As indicated in Table 4.G.2, the SFBAAB is designated as "non-attainment" for State ozone, PM_{10}, and $PM_{2.5}$ standards, and is designated as "attainment" for other pollutants.

Toxic Air Contaminants

In 2005, the CARB approved a regulatory measure to reduce emissions of toxic and criteria pollutants by limiting the idling of new heavy-duty diesel vehicles. The regulations generally limit idling of commercial motor vehicles (including buses and trucks) within 100 feet of a school or residential area for more than 5 consecutive minutes or periods aggregating more than 5 minutes in any 1 hour. Buses or vehicles also must turn off their engines upon stopping at a school and must not turn their engines on more than 30 seconds before beginning to depart from a school. Also, State law Senate Bill 352 (SB 352) was adopted in 2003 and limits locating public schools within 500 feet of a freeway or busy traffic corridor (Section 17213 of the Education Code; Section 21151.8 of the Public Resources Code).

The Carl Moyer Memorial Air Quality Standards Attainment Program

The Carl Moyer Memorial Air Quality Standards Attainment Program (Carl Moyer Program) is a grant program that reduces air pollution from vehicles and equipment by providing funds to replace or retrofit older equipment or engines with engines, equipment, and other sources of air pollution, such as ground support equipment at airports, that are cleaner than what the EPA would require. Money collected through the Carl Moyer Program complements California's regulatory program by providing incentives to affect early or extra emission reductions, especially from emission sources in environmental justice communities and areas disproportionately impacted by

air pollution. The Carl Moyer Program funds clean air projects involving a variety of vehicles and equipment, including the following.

- Repower: The replacement of an in-use engine with another, cleaner engine.
- Retrofit: An emission control system used exclusively with an in-use engine, vehicle, or piece of equipment.
- New purchases: Vehicles or equipment certified to optional, lower emission standards.
- Fleet modernization or equipment replacement: The replacement of an older vehicle or piece of equipment that still has a remaining useful life with a newer, cleaner vehicle or piece of equipment. The old vehicle/equipment is scrapped. Equipment may include on-road heavy-duty vehicles and off-road equipment replacement as well as emergency vehicles (fire apparatus) and lawn and garden equipment replacement.
- Vehicle retirement (or car scrap): Paying owners of older, more polluting vehicles that still have remaining useful life to voluntarily retire those vehicles earlier than they would have otherwise.

The Carl Moyer Program establishes a cost effectiveness standard that a proposed clean air project must meet to receive funding under the program. On March 27, 2015, the cost effectiveness limit was updated to $18,030 per weighted ton of ROG, NOx, and PM in resulting emissions reductions.[32] The program has established guidelines and criteria for the funding of emissions reduction projects. The BAAQMD administers the Carl Moyer Program within the SFBAAB.

REGIONAL AND LOCAL REGULATIONS AND PLANS

Bay Area Air Quality Management District

The BAAQMD is the regional agency with jurisdiction over the nine-county region located in the SFBAAB. The Association of Bay Area Governments, Metropolitan Transportation Commission, county transportation agencies, cities and counties, and various non-governmental organizations also participate in the efforts to improve air quality through a variety of programs. These programs include the adoption of regulations and policies, as well as implementation of extensive education and public outreach programs. BAAQMD is responsible for attaining and maintaining air quality in the region within Federal and State air quality standards. Specifically, BAAQMD has the responsibility to monitor ambient air pollutant levels throughout the region and to develop and implement strategies to attain the applicable Federal and State standards.

[32] CARB. Memorandum Re: Carl Moyer Program: Review and Update of the Cost-Effectiveness Limit and Capital Recovery Factors for 2015. March 27, 2015. Available online at http://www.arb.ca.gov/msprog/mailouts/msc1509/msc1509.pdf. Accessed April 24, 2015.

BAAQMD does not have authority to regulate emissions from motor vehicles. Specific rules and regulations adopted by the BAAQMD limit the emissions that can be generated by various stationary sources, and identify specific pollution reduction measures that must be implemented in association with various activities. These rules regulate not only emissions of the six criteria air pollutants, but TAC emissions sources are also subject to these rules and are regulated through the BAAQMD's permitting process and standards of operation. Through this permitting process, including an annual permit review, the BAAQMD monitors the generation of stationary emissions and uses this information in developing its air quality plans. Any sources of stationary emissions constructed as part of the Proposed Project would be subject to the BAAQMD Rules and Regulations. Both Federal and State ozone plans rely heavily on stationary source control measures set forth in BAAQMD's Rules and Regulations.

Per its Engineering Policy and Procedure Manual,[33] the BAAQMD requires implementation of best available control technology for toxics and would deny an authority to construct or a permit to operate for any new or modified source of TACs that exceeds a cancer risk of 10 in one million or a chronic or acute hazard index of 1.0. The permitting process under BAAQMD Regulation 2, Rule 5 requires a Health Risk Screening Analysis, the results of which are posted on the BAAQMD's website.

Bay Area Air Quality Planning Relative to State and Federal Standards

Federal Air Quality Plan

Air quality plans developed to meet Federal requirements are referred to as State Implementation Plans. The Federal and State Clean Air Acts require plans to be developed for areas designated as non-attainment (with the exception of areas designated as non-attainment for the State PM_{10} standard). The most recent Bay Area ozone plan prepared in response to Federal air quality planning requirements is the 2001 Ozone Attainment Plan.

California Air Quality Plan

The *Bay Area 2010 Clean Air Plan* (hereafter the Clean Air Plan) was adopted on September 15, 2010, by the BAAQMD, in cooperation with the Bay Area Metropolitan Transportation Commission, the Bay Conservation and Development Commission, and Association of Bay Area Governments. The Clean Air Plan defines a control strategy that the BAAQMD and its partners implement to "(1) reduce emissions and decrease ambient concentrations of harmful pollutants; (2) safeguard public health by reducing exposure to air pollutants that pose the greatest health

[33] BAAQMD, Engineering Policy and Procedure Manual, 2013. Available online at http://www.baaqmd.gov/~/media/files/engineering/policy_and_procedures/engineering-policy-and-procedure-manual.pdf?la=en. Accessed February 6, 2016.

risk, with an emphasis on protecting the communities most heavily impacted by air pollution; and (3) reduce greenhouse gas (GHG) emissions to protect the climate. The legal impetus for the CAP is to update the previous ozone plan, the Bay Area 2005 Ozone Strategy, to comply with State air quality planning requirements as codified in the California Health & Safety Code."[34]

The 2010 Clean Air Plan updates and replaces the *2005 Ozone Strategy* in accordance with the requirements of the California Clean Air Act to implement "all feasible measures" to reduce ozone; provide a control strategy to reduce ozone, PM, TACs, and GHGs in a single, integrated plan; review progress in improving air quality in recent years; and establish emission control measures to be adopted or implemented in the 2010–2012 time frame. The control strategy includes stationary-source control measures to be implemented through BAAQMD regulations; mobile-source control measures to be implemented through incentive programs and other activities; and transportation control measures to be implemented through transportation programs in cooperation with the Metropolitan Transportation Commission, local governments, transit agencies, and others. The Clean Air Plan also represents the Bay Area's most recent triennial assessment of the region's strategy to attain the State 1-hour ozone standard.[35] The 2010 Clean Air Plan is currently in the process of being updated with a Final Draft expected to be circulated in mid to late December 2016 and will be considered for approval by the BAAQMD Board in Spring of 2017.

San Francisco General Plan Air Quality Element

The *San Francisco General Plan* (*General Plan*) includes the 1997 Air Quality Element.[36] The objectives specified by the City include the following.

Objective 1:	Adhere to State and Federal air quality standards and regional programs.
Objective 2:	Reduce mobile sources of air pollution through implementation of the Transportation Element of the General Plan.
Objective 3:	Decrease the air quality impacts of development by coordination of land use and transportation decisions.
Objective 4:	Improve air quality by increasing public awareness regarding the negative health effects of pollutants generated by stationary and mobile sources.
Objective 5:	Minimize particulate matter emissions from road and construction sites.

[34] BAAQMD, *Bay Area 2010 Clean Air Plan, Final Clean Air Plan Volume 1*, p. ES-1, Adopted September 15, 2010.

[35] BAAQMD, *2010 Clean Air Plan*. Available online at http://www.baaqmd.gov/Divisions/Planning-and-Research/Plans/Clean-Air-Plans.aspx. Accessed November 20, 2015.

[36] San Francisco Planning Department, Air Quality Element of the *San Francisco General Plan*, July 1997, updated in 2000.

Objective 6: Link the positive effects of energy conservation and waste management to emission reductions.

San Francisco Construction Dust Ordinance

The City has adopted San Francisco Health Code Article 22B and San Francisco Building Code Section 106.A.3.2.6, which collectively constitute the Construction Dust Control Ordinance. The ordinance requires that all site preparation work, demolition, or other construction activities within San Francisco that have the potential to create dust or to expose or disturb more than 10 cubic yards or 500 square feet of soil comply with specified dust control measures whether or not the activity requires a permit from the Department of Building Inspection (DBI). For projects over 0.5 acre, the Dust Control Ordinance requires that the project sponsor submit a dust control plan for approval by the San Francisco Department of Public Health prior to issuance of a building permit by DBI or Port of San Francisco.

Building permits will not be issued without written notification from the Director of Public Health that the applicant has a site-specific dust control plan, unless the Director waives the requirement. The Construction Dust Control Ordinance requires project sponsors and contractors responsible for construction activities to control construction dust on the site or implement other practices that result in equivalent dust control that are acceptable to the Director of Public Health.

Dust suppression activities may include watering of all active construction areas sufficiently to prevent dust from becoming airborne; increased watering frequency may be necessary whenever wind speeds exceed 15 mph. Reclaimed water must be used if required by Article 21, Section 1100 et seq. of the San Francisco Public Works Code.

The project site is over 35 acres in size, and therefore the project sponsor would be required to prepare a dust control plan.

San Francisco Health Code Provisions for Urban Infill Development (Article 38)

San Francisco adopted Article 38 of the San Francisco Health Code in 2008, with revisions that took effect in December 2014. The revised code requires that sensitive land use developments within the mapped Air Pollutant Exposure Zones (APEZ) incorporate Minimum Efficiency Reporting Value 13 (MERV-13)-equivalent ventilation systems to remove particulates from outdoor air. This regulation also applies to conversion of uses to a sensitive use (residential, senior care facilities, day care centers, etc.). Article 38 may be applicable to the eastern portion of the Proposed Project because it is currently identified as within an APEZ in the Article 38 map

prepared by the San Francisco Department of Public Health[37] and would include sensitive (residential) land uses. Under Article 38, updates to the mapping are conducted every 5 years and those portions of the project site identified on the current map at the time of permitting would be subject to the filtration requirements. This designation is primarily the result of emissions from the BAE Systems ship repair facility north of the project site, which operates diesel generators to maintain power for ships while at dry dock and also conducts sandblasting activities, the former of which generates DPM emissions and the latter of which generates $PM_{2.5}$ emissions. The location of emissions from the BAE Systems facility was updated as part of this project's air quality analysis and based on that modeling, the project site would no longer meet the criteria for being within the APEZ. See Impact AQ-3 below for more information.

IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE THRESHOLDS

For the impacts analyzed in this section, the project would have a significant impact related to air quality if it were to:

- conflict with or obstruct implementation of the applicable air quality plan;
- violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable Federal or State ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors);
- expose sensitive receptors to substantial pollutant concentrations; or
- create objectionable odors affecting a substantial number of people.

APPROACH TO ANALYSIS

In general, the Proposed Project would result in two types of potential air quality impacts. First, the project would result in air pollution through construction activity. Second, the project would generate air pollutants during project operations, due to increased vehicle travel and new stationary sources (i.e., up to 11 new emergency standby diesel generators). During the approximately 11-year construction phase, operation of earlier phases of the project would overlap with construction of later phases.

[37] San Francisco Department of Public Health, Air Pollution Exposure Zone Map, Inset 2. Available online at https://www.sfdph.org/dph/files/EHSdocs/AirQuality/AirPollutantExposureZoneMap.pdf. Accessed February 6, 2016.

Each of these types of direct impacts is in turn separated into impacts from criteria air pollutant emissions, which are generally regional in nature, and into impacts associated with exposure to TACs and $PM_{2.5}$, which is a localized health impact expressed in terms of exposure to $PM_{2.5}$ concentrations and the probability of contracting cancer per 100 in one million persons exposed to TAC concentrations. The assessment of criteria air pollutant impacts addresses the second and third bulleted significance thresholds identified above. The assessment of localized health risk and exposure to $PM_{2.5}$ concentrations addresses the fourth bulleted significance threshold identified above.

Air quality analysis conducted for this impact assessment uses the emission factors, models, and tools distributed by a variety of agencies including CARB, the California Air Pollution Officers Association, the California Office of Environmental Health Hazard Assessment (March 2015), and the EPA. Additionally, the analysis includes methodologies identified in the BAAQMD *CEQA Air Quality Guidelines* (May 2012).

In the *California Building Industry Association v. Bay Area Air Quality Management District* case decided in 2015,[38] the California Supreme Court held that CEQA does not generally require lead agencies to consider how existing environmental conditions might impact a project's users or residents, except where the project would significantly exacerbate an existing environmental condition. Accordingly, the significance criteria above related to exposure of new sensitive receptors to substantial pollutant concentrations are valid only to the extent that the project significantly exacerbates the air quality conditions. An impact is considered significant if the project would significantly exacerbate existing or future air quality conditions.

PROJECT FEATURES

The Proposed Project would include amendments to the *General Plan* and Planning Code, adding a new Pier 70 Special Use District (SUD), which would establish land use controls for the project site and incorporate the design standards and guidelines in the proposed *Pier 70 SUD Design for Development* document.

Under the provisions of the proposed Pier 70 SUD, the Proposed Project would provide a flexible land use program. To cover a full range of potential land uses that could be developed under the Proposed Project, the EIR analyzes a maximum residential use scenario (Maximum Residential Scenario) and a maximum commercial use scenario (Maximum Commercial Scenario) for the project site, which bracket specific maximum ranges of uses that could be developed.

[38] *California Building Industry Association v. Bay Area Air Quality Management District*, 62 Cal.4th 369. Opinion Filed December 17, 2015.

Proposed land uses on each parcel in the project site under both scenarios are presented in Figure 2.7: Proposed Land Use Plan – Maximum Residential Scenario, and Figure 2.8: Proposed Land Use Plan – Maximum Commercial Scenario, in Chapter 2, Project Description, pp. 2.30 and 2.32, respectively. Figure 2.10: Proposed Height Limits Plan, p. 2.36, shows that 10 parcels could have up to 11 structures exceeding 70 feet in height. Because of building code requirements, buildings of this height may require emergency standby generators that are a source of air pollutant emissions.

Under both scenarios, two parcels (C1 and C2) on the project site that are designated for district-structured parking could be developed with a mixture of residential/commercial uses or only residential use, depending on future market demand. Specifically, Parcel C1 could be developed with residential, commercial, or parking uses, and Parcel C2 could be developed with residential or parking uses. Active public rooftop open space (sports courts, play fields, urban agriculture plots, seating, and observational terrace areas) could be developed on the roof of both of these parcels under both scenarios as well if the parcels are built as district parking structures. As a conservative measure, the air quality analysis assumes that these parcels will be developed with residential/commercial uses instead of parking structures, because for transportation and air quality purposes parking structures are not considered to be vehicle trip generators. Additionally, construction of residential/commercial uses would generate more emissions than a parking structure due to more extensive interior finishing and use of natural gas for heating purposes.

AIR QUALITY PLAN

The applicable air quality plan is the BAAQMD's 2010 Clean Air Plan. Consistency with the Clean Air Plan can be determined if the project supports the goals of the plan, includes applicable control measures from the plan, and if the project would not disrupt or hinder implementation of any control measures from the plan. Consistency with the Clean Air Plan is the basis for determining whether the Proposed Project would conflict with or obstruct implementation of an applicable air quality plan, the first bulleted significance criterion identified above.

CRITERIA AIR POLLUTANTS

As described above under Regulatory Framework, the SFBAAB experiences low concentrations of most pollutants when compared to Federal or State standards and is designated as either in attainment or unclassified for most criteria pollutants, with the exception of ozone, $PM_{2.5}$, and PM_{10}, for which these pollutants are designated as non-attainment for either the State or Federal standards.

By definition, regional air pollution is largely a cumulative impact in that no single project is sufficient in size to, by itself, result in non-attainment of air quality standards. Instead, a project's

individual emissions are considered to contribute to the existing, cumulative air quality conditions. If a project's contribution to cumulative air quality conditions is considerable, then the project's impact on air quality would be considered significant.[39]

Table 4.G.5: Criteria Air Pollutant Thresholds, identifies quantitative criteria air pollutant significance thresholds followed by a discussion of each threshold. Projects that would result in criteria pollutant emissions below these significance thresholds would not violate an air quality standard, contribute substantially to an air quality violation, or result in a cumulatively considerable net increase in criteria air pollutants within the SFBAAB. Both of these threholds (average daily and maximum annual) apply to operational emissions from a given project. Construction emissions are assessed solely with respect to the average daily threholds, pursuant to BAAQMD guidance, because of the temporary nature of construction-related emissions.[40]

Table 4.G.5: Criteria Air Pollutant Thresholds

Pollutant	Average Daily Emissions (pounds per day)	Maximum Annual Emissions (tons per year)
ROG	54	10
NOx	54	10
PM_{10}	82	15
$PM_{2.5}$	54	10
Fugitive Dust	Construction dust ordinance or other best management practices to control fugitive dust emissions	

Source: BAAQMD, CEQA Air Quality Guidelines, June 2011, p. 2-2. Available online at http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/BAAQMD%20CEQA%20Guidelines%20May%202011.ashx?la=en. Accessed February 6, 2016.

The thresholds of significance for criteria air pollutants are based on substantial evidence presented in Appendix D of the 2011 BAAQMD CEQA Air Quality Guidelines and BAAQMD's 2009 *Revised Draft Options and Justification Report* concerning CEQA thresholds.[41]

The potential for a project to result in a cumulatively considerable net increase in criteria air pollutants that may contribute to an existing or projected air quality violation is based on the State and Federal Clean Air Acts' emissions limits for stationary sources. To ensure that new

[39] BAAQMD, *CEQA Air Quality Guidelines*, p. 2-1, May 2011. Available online at http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/BAAQMD%20CEQA%20Guidelines%20May%202011.ashx?la=en. Accessed February 6, 2016.

[40] Ibid.

[41] BAAQMD, CEQA Air Quality Guidelines, May 2011, p. 2-2; BAAQMD, *Revised Draft Options and Justification Report, California Environmental Quality Act Thresholds of Significance*, p. 17, October 2009.

stationary sources do not cause or contribute to a violation of an air quality standard, BAAQMD Regulation 2, Rule 2 requires that any new source that emits criteria air pollutants above a specified emissions limit must offset those emissions. For ozone precursors ROG and NOx, the offset emissions level is an annual average of 10 tons per year (or 54 pounds per day).[42] These levels represent emissions below which new sources are not anticipated to contribute to an air quality violation or result in a considerable net increase in criteria air pollutants that could result in increased health effects.

The Federal New Source Review program was created under the Federal Clean Air Act to ensure that stationary sources of air pollution are constructed in a manner that is consistent with attainment of Federal health-based ambient air quality standards. For PM_{10} and $PM_{2.5}$, the emissions limit under the New Source Review program is 15 tons per year (82 pounds per day) and 10 tons per year (54 pounds per day), respectively. These emissions limits represent levels at which a source is not expected to have a significant impact on air quality.[43]

Although the regulations specified above apply to new or modified stationary sources, land use development projects generate ROG, NOx, PM_{10}, and $PM_{2.5}$ emissions as a result of increases in vehicle trips, energy use, architectural coating, and construction activities. Therefore, the identified thresholds can be applied to the construction and operational phases of land use projects. Those projects that would result in emissions below these thresholds would not be considered to contribute to an existing or projected air quality violation or result in a considerable net increase in ozone precursors or PM.

Fugitive dust emissions are typically generated during construction phases. Studies have shown that the application of best management practices (BMPs) at construction sites significantly controls fugitive dust,[44] and individual measures have been shown to reduce fugitive dust by anywhere from 30 to 90 percent.[45] The BAAQMD has identified eight BMPs to control fugitive dust emissions from construction activities.[46] San Francisco's Construction Dust Control Ordinance requires a number of fugitive dust control measures to ensure that construction projects do not result in visible dust. The project would be subject to the requirements of the

[42] BAAQMD, *Revised Draft Options and Justification Report, California Environmental Quality Act Thresholds of Significance*, p. 17, October 2009.
[43] BAAQMD, *Revised Draft Options and Justification Report, California Environmental Quality Act Thresholds of Significance*, p. 16, October 2009.
[44] Western Regional Air Partnership, *WRAP Fugitive Dust Handbook,* September 7, 2006. Available online at wrapair.org/forums/dejf/fdh/content/FDHandbook_Rev_06.pdf. Accessed November 20, 2015.
[45] BAAQMD, *Revised Draft Options and Justification Report, California Environmental Quality Act Thresholds of Significance*, October 2009, p. 27.
[46] BAAQMD, *CEQA Air Quality Guidelines*, May 2011, p. 8-3.

Construction Dust Control Ordinance, which is the basis for determining the significance of air quality impacts from fugitive dust emissions.

Total construction emissions by phase were calculated using the latest version of CalEEMod (version 2013.2.2), and total emissions were divided by the number of construction days by phase to derive average daily emissions for comparison against applicable significance thresholds.

Construction emissions would be generated by many different construction sources, including off-road construction equipment such as excavators, loaders, backhoes, drill rigs, and cranes; and on-road trucks. The predominant source of emissions of NOx, PM_{10}, and $PM_{2.5}$ would be off-road equipment, which would generate more than three times the emissions of on-road vehicles and trucks.

Because operation of earlier phases would occur during construction of later phases, the construction analysis accounts for operational emissions that would occur simulataneously with construction of later phases. Therefore, operational emissions are evaluated after each of the five phases of construction and upon buildout of each scenario using the CalEEMod model. This allows for an analysis of the total emissions that would occur from construction activities and simultaneous operations during the 11-year construction period.

OTHER CRITERIA POLLUTANTS

Regional concentrations of CO in the Bay Area have not exceeded the State standards in the past 11 years, and SO_2 concentrations have never exceeded the standards. The primary source of CO emissions from development projects is vehicle traffic. Construction-related SO_2 emissions represent a negligible portion of the total basin-wide emissions, and construction-related CO emissions represent less than 5 percent of the Bay Area total basin-wide CO emissions. As discussed previously, the Bay Area is in attainment for both CO and SO_2. Furthermore, the BAAQMD has demonstrated, based on modeling, that to exceed the California ambient air quality standard of 9.0 ppm (8-hour average) or 20.0 ppm (1-hour average) for CO, project traffic in addition to existing traffic would need to exceed 44,000 vehicles per hour at affected intersections (or 24,000 vehicles per hour where vertical and/or horizontal mixing is limited). The transportation analysis indicates that the intersection in the project area with the greatest vehicle volumes would be Fifth and Harrison streets with hourly volumes of 5,432 in year 2040 with the project and convention traffic, which is less than 24,000. Therefore, given the Bay Area's attainment status and the limited CO and SO_2 emissions that could result from the project, the project would not result in a cumulatively considerable net increase in CO or SO_2, and a quantitative analysis is not required.

LOCAL HEALTH RISKS AND HAZARDS

In addition to criteria air pollutants, individual projects may emit TACs. Analysis of toxic substances that may become airborne such as naturally occurring asbestos is assessed in Section 4.P, Hazards and Hazardous Materials.

As part of this project, Ramboll/ENVIRON conducted an HRA for the Proposed Project to provide quantitative estimates of health risks from exposures to TACs. The results have been included in an AQTR.[47] The HRA examined all sensitive receptors within 1,000 meters of the project boundary. The HRA effort updated the Citywide CRRP model to reflect refined locations of existing stationary sources as well as to update cancer risk values based on the latest (2015) guidance by the State OEHHA which will be considered for adoption by BAAQMD near the end of 2016[48]. The Proposed Project would locate new sensitive receptors (residential land uses) under both of the analyzed scenarios. The entirety of the project site was assessed as a potential sensitive receptor area using a 20-meter receptor grid. Refer to Figures 2.7 and 2.8, p. 2.30 and p. 2.32 of Chapter 2, Project Description. respectively, for specific locations of on-site residential uses under each of the scenarios analyzed. Exposure assessment guidance[49] establishes the assumption that people in residences would be exposed to air pollution 24 hours per day, 350 days per year, for 30 years as the basis for calculating cancer risk in all HRAs. Therefore, the assessment of air pollutant exposure to residents typically result in the greatest adverse health outcomes of all population groups.

As discussed previously, neither the proposed receptors nor the nearest off-site receptors are located within an area that currently meets the APEZ criteria. For receptors not located in areas that meet the APEZ criteria, an HRA is conducted to determine whether the Proposed Project would, in combination with other exiting sources in the area, result in a given off-site or on-site receptor meeting the APEZ criteria. If a receptor point meets the APEZ criteria, that otherwise would not without the project, a project would result in a significant health risk impact if the project would contribute to $PM_{2.5}$ concentrations above 0.3 $\mu g/m^3$ or result in an excess cancer risk greater than 10.0 per million persons exposed. The 0.3 $\mu g/m^3$ $PM_{2.5}$ concentration and the excess cancer risk of 10.0 per one million persons exposed are the levels below which the

[47] Environmental Science Associates, Pier 70 Mixed Use District Project Air Quality Technical Report, December 2016.

[48] Chong, Daphne, Toxicologist, Bay Area Air Quality Management District, phone conversation (with Chris Sanchez at Environmental Science Associates), October 12, 2016.

[49] California Environmental Protection Agency, *The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessment*, February 2015. Available online at http://oehha.ca.gov/air/hot_spots/2015/2015GuidanceManual.pdf. Accessed January 18, 2016.

BAAQMD considers new sources not to make a considerable contribution to cumulative health risks.[50]

CUMULATIVE IMPACTS

As discussed above, the contribution of a project's individual air emissions to regional air quality impacts is, by its nature, a cumulative effect. Emissions from past, present, and future projects in the vicinity also have or will contribute to adverse regional air quality impacts on a cumulative basis. No single project by itself would be sufficient in size to result in non-attainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulative air quality conditions.[51] As described above, the project-level thresholds for criteria air pollutants are based on levels by which new sources are not anticipated to contribute to an air quality violation or result in a considerable net increase in criteria air pollutants. Therefore, if a project's emissions are below the project-level thresholds, the project would not be considered to result in a considerable contribution to cumulative regional air quality impacts.

Similarly, the HRA takes into account the cumulative contribution of localized health risks to sensitive receptors from sources included in the Citywide modeling plus the Proposed Project's sources. Other future projects, whose emissions have not been incorporated into the existing citywide health risk modeling are also taken into consideration. However, unlike criteria air pollutants, health risks are localized impacts in that that beyond 1,000 feet from an emission source, pollutant levels tend to return to background levels. Thus, cumulative health risks are typically assessed based on cumulative emissions sources within 1,000 feet of a project site.

IMPACT EVALUATION

Impact AQ-1: During construction, the Proposed Project would generate fugitive dust and criteria air pollutants, which would violate an air quality standard, contribute substantially to an existing or projected air quality violation, and result in a cumulatively considerable net increase in criteria air pollutants. ***(Significant and Unavoidable with Mitigation)***

Construction activities would result in emissions of ozone precursors and PM in the form of dust (fugitive dust) and exhaust (e.g., vehicle tailpipe emissions). Emissions of ozone precursors and PM are primarily a result of the combustion of fuel from on-road and off-road vehicles. However, ROGs are also emitted from activities that involve painting, other types of architectural

[50] BAAQMD, *California Environmental Quality Act Guidelines Update, Proposed Air Quality CEQA Thresholds of Significance*, May 3, 2010. vailable online at www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/Proposed_Thresholds_Report_%20May_3_2010_Final.ashx?la=en. accessed October 21, 2015.

[51] BAAQMD, *CEQA Air Quality Guidelines*, May 2011, p. 2-1.

coatings, or asphalt paving. For both development scenarios, the Maximum Residential Scenario and the Maximum Commercial Scenario, Proposed Project construction is conceptual; however it is expected to begin in 2018 and would be phased over an approximately 11-year period, concluding in 2029. Proposed development is expected to involve up to five phases, designated as Phases 1, 2, 3, 4, and 5; phasing estimates are shown in Table 2.5: Project Construction Phasing – Maximum Residential Scenario, in Chapter 2, Project Descripton, pp. 2.80-2.81, Figure 2.21: Proposed Phasing Plan – Maximum Residential Scenario, p. 2.60, Table 2.6: Project Construction Phasing – Maximum Commercial Scenario, pp. 2.83-2.84, and Figure 2.22: Proposed Phasing Plan – Maximum Commercial Scenario, p. 2.63.

Construction phases would include demolition, excavation, and site preparation; pile installation; placement of infrastructure; placement of foundations for structures; and fabrication of structures. Demolition and construction activities would require the use of drill rigs, heavy trucks, excavators, material loaders, cranes, and other mobile and stationary construction equipment. During the project's approximately 11-year construction period, construction activities would result in emissions of ozone precursors and PM, as discussed below.

Fugitive Dust

Project-related demolition, excavation, grading, and other construction activities may cause wind-blown dust that could contribute PM into the local atmosphere. Despite the established Federal standards for air pollutants and ongoing implementation of State and regional air quality control plans, air pollutants continue to have impacts on human health throughout the country.

Dust can be an irritant causing watering eyes or irritation to the lungs, nose, and throat. Demolition, excavation, grading, and other construction activities can cause wind-blown dust that adds PM to the local atmosphere. Depending on exposure, adverse health effects can occur due to this PM in general as well as due to specific contaminants, such as lead or asbestos that may be constituents of dust.

In response to these concerns, the San Francisco Board of Supervisors approved a series of amendments to the San Francisco Building and Health Codes, generally referred hereto as the Construction Dust Control Ordinance (Ordinance 176-08, effective July 30, 2008), with the intent of reducing the quantity of dust generated during site preparation, demolition, and overall construction work in order to protect the health of the general public and onsite workers, to minimize public nuisance complaints, and to avoid orders to stop work by DBI. The Dust Control Ordinance would be applicable for the portion of the project site that is outside Port jurisdiction (Hoe Down Yard). For portions of the project site under the jurisdiction of the Port (20th/Illinois Parcel and 28-Acre Site), Section 1247 of Article 22B of the Public Health Code requires that all city agencies that authorize construction or other improvements on City property

adopt rules and regulations to ensure that the dust control requirements of Article 22B are followed. The DBI will not issue a building permit without written notification from the Director of Public Health that the applicant has a site-specific dust control plan, unless the Director waives the requirement. The site-specific dust control plan would require the project sponsor to submit a map to the Director of Public Health showing all sensitive receptors within 1,000 feet of the site. If the project is determined to be within 1,000 feet of sensitive receptors, a site-specific dust control plan shall be submitted to the Director of Health. This plan shall contain the following measures specified in Section 106.3.2.6.3 of the Building Code: designate an individual who will be responsible for monitoring compliance with dust control requirements; water all active construction areas sufficiently to prevent dust from becoming airborne, using reclaimed water whenever possible; during excavation and dirt-moving activities, wet sweep or vacuum streets and sidewalks where work is in process; cover any inactive stockpiles; and use dust enclosures, curtains, and dust collectors as necessary.

In addition, the site-specific dust control plan may require the project sponsor to wet down areas of soil at least three times per day; provide an analysis of wind direction and install upwind and downwind particulate dust monitors; record particulate monitoring results; hire an independent, third-party to conduct inspections and keep a record of those inspections; establish shut-down conditions based on wind, soil migration, etc.; establish a hotline for surrounding community members who may be potentially affected by project-related dust; limit the area subject to construction activities at any one time; install dust curtains and windbreaks on the property lines, as necessary; limit the amount of soil in hauling trucks to the size of the truck bed and securing with a tarpaulin; enforce a 15 mph speed limit for vehicles entering and exiting construction areas; sweep affected streets with water sweepers at the end of the day; install and use wheel washers to clean truck tires; terminate construction activities when winds exceed 25 mph; and sweep off adjacent streets to reduce particulate emissions. Inactive stockpiles (where no disturbance occurs for more than 7 days) greater than 10 cubic yards or 500 square feet of excavated material, backfill material, import material, gravel, sand, road base, and soil shall be covered with a 10 mil (0.01 inch) polyethylene plastic (or equivalent) tarp, braced down, or other equivalent soil stabilization techniques should be used. Reclaimed water must be used for dust suppression watering, when required by Article 21, Section 1100 et seq. of the San Francisco Public Works Code. Even if not required, reclaimed water should be used whenever possible. Contractors shall provide as much water as necessary to control dust (without creating run-off in any area of land clearing, and/or earth movement).

Implementation of dust control measures in compliance with the regulations and procedures set forth by the San Francisco Dust Control Ordinance would ensure that potential dust-related construction air quality impacts of the Proposed Project would be less than significant.

Criteria Air Pollutants

Methodology – Construction Emissions

Construction-related emissions of criteria air pollutants were calculated using the CalEEMod emissions calculator model (version 2013.2.2) developed for the California Air Pollution Control Officers Association. Although the project sponsors provided illustrative information on estimated sequences of phase construction, project-specific off-road equipment types are not known at this stage of project development. Consequently, the air quality analysis used default off-road equipment types represented in the CalEEMod model[52] as assumptions for each phase.

On-road haul truck traffic would primarily consist of material delivery to the site and removal of demolition and excavation materials. Approximately 325,000 cubic yards of soil would be hauled away from the entire site for all five phases of construction, resulting in a maximum of 80 round trips per day (160 one-way trips), including both soil off-haul and demolition spoils. These soil haul trips were allocated to the site preparation and grading phases of construction. Additional trucks would be required for concrete delivery, plus vendor trips allocated to the building construction phases of the construction periods.

Construction of the Proposed Project would occur in five phases over an up to 11-year period and buildings constructed in a given phase would be occupied after completion of that phase. Phases 1 and 2 are assumed to commence construction in 2018, Phase 3 in 2021, Phase 4 in 2024, and Phase 5 in 2027. During construction of Phase 3, Phases 1 and 2 are assumed to be operational. Therefore, the analysis adds together the construction emissions of Phase 3 and the operational emissions of Phases 1 and 2. The phases may not be undertaken exactly as laid out in the phasing diagram, so these emissions estimates are designed to provide a representative approximation. The CalEEMod model output reports as well as summary sheets detailing input values are provided in the AQTR in Appendix D.

Methodology – Operational Emissions

The Proposed Project would generate operational emissions from a variety of sources, including stationary sources (diesel emergency generators); area sources (natural gas combustion in boilers/heaters, and stoves, consumer products, architectural coatings, and landscape equipment); and from mobile sources (daily automobile and truck trips). Potential emissions from 11 emergency diesel generators (stationary sources) were estimated based on CARB/EPA Tier 2

[52] On August 5, 2013, BAAQMD notified the public via its website that all future CEQA analysis of criteria pollutant emissions should be conducted using CalEEMod. However, this notification is no longer posted.

emission standards, conservatively assuming that each parcel with designated building height limits in excess of 70 feet would require such equipment. Currently, the project applicant does not have specifications for potential generators. It was assumed that proposed generators would be 400 horsepower units and would meet the Federal Tier 2 diesel engine standards for PM for diesel engines with a rating between 75 and 750 horsepower and operate 50 hours per year (consistent with BAAQMD permitting limits). Project operational emissions of criteria pollutants from vehicle, stationary (backup generators), and area sources are summed to determine total operational emissions. Ultimately, the vast majority (98 percent) of operational emissions are from mobile emissions (54 percent) and area sources (43 percent). The area source emission component is primarily attributable to the use of consumer products by building occupants (77 percent) and the application of paints and other architectural coatings for maintenance purposes (18 percent).

Area-source and energy emissions were calculated using CalEEMod model based on the type and size of land uses associated with the Proposed Project, including the number of estimated residents. Area sources include natural gas combustion in stoves, hearths, consumer products, area architectural coatings, and landscaping equipment. San Francisco County-specific consumer product emission rate data were used in the CalEEMod model to estimate daily VOC emissions.

Mobile-source emissions would result from vehicle trips (auto and truck) associated with the Proposed Project and were also calculated using the CalEEMod model based on the number of vehicle trips identified in the transportation impact study prepared for the project.[53] Operational emission calculations for entrained road dust are based on San Francisco-specific silt loadings.[54]

The detailed quantification of operational-related criteria air pollutant emissions was conducted for the Proposed Project for both the Maximum Residential Scenario and the Maximum Commercial Scenario at project build out, year 2030, as well as at the completion of each incremental phase of construction, in 2020 (after completion of Phase 1), 2022 (completion of Phase 2), 2025 (completion of Phase 3), and 2028 (completion of Phase 4). The criteria air pollutant significance thresholds are based on levels by which a project would contribute considerably to significant air quality impacts (the project being the sum of the emissions at any one time, whether the emissions are from operation or construction is inconsequential to the effect on the air basin). Consequently, operational emissions are added to construction emissions when they would occur simultaneously, to disclose and analyze the air quality impacts of the whole project.

[53] Fehr & Peers, Transportation Impact Study, Pier 70 Waterfront Site Special Use District (SUD) Project, Screencheck Draft, December 2016.

[54] CARB, Miscellaneous Process Methodology 7.9, Entrained Road Travel, Paved Road Dust, Revised April 2014.

Maximum Residential Scenario

Table 4.G.6: Unmitigated Average Daily and Maximum Annual Emissions for the Maximum Residential Scenario During Construction, presents construction-period emissions for the Maximum Residential Scenario, which, due to the concurrent construction and operation of the project, are calculated in terms of average daily emissions and worse case maximum annual emissions.

Construction of the Maximum Residential Scenario would result in emissions of ROG, NOx, PM_{10}, and $PM_{2.5}$ that would be below the thresholds of significance when considered alone. However, future construction phases (Phases 3, 4, and 5) would occur when operational emissions would also be generated by the earlier phases.

As shown in Table 4.G.6, construction-related emissions during concurrent construction of Phases 1 and 2 which includes development of the entirety of the Illinois Parcels would be less than significant. Additionally, after completion and occupancy of Phase 1 and the continuation of Phase 2 construction, the combined construction-related and operational emissions would be less than significant. However, construction of Phase 3, when considered with occupancy and operation of Phases 1 and 2, would result in emissions of ROG and NOx that would exceed significance thresholds, while emissions of PM_{10} and $PM_{2.5}$ would be below their respective thresholds.

Construction of Phase 4 and Phase 5 when considered with occupancy and operation of earlier phases would also result in emissions of ROG and NOx that would exceed significance thresholds, while emissions of PM_{10} would be meet the threhold with Phase 5 construction and $PM_{2.5}$ emissions would be below thresholds.

Therefore, unmitigated criteria pollutant emissions from the Maximum Residential Scenario during simultaneous construction and operation would be a significant air quality impact.

MAXIMUM COMMERCIAL SCENARIO

Table 4.G.7: Unmitigated Average Daily and Maximum Annual Emissions for the Maximum Commercial Scenario During Construction, presents construction-period emissions for the Maximum Construction Scenario. As shown in Table 4.G.7, construction-related emissions during concurrent construction of Phases 1 and 2 which include development of the entirety of the Illinois Parcels would be less than significant, as would the continued construction of Phase 2 with completion and occupancy of Phase 1. However, construction of Phase 3 when considered with occupancy and operation of Phases 1 and 2 would result in emissions of ROG and NOx that would exceed significance thresholds, while emissions of PM_{10} and $PM_{2.5}$ would be below their respective thresholds.

Table 4.G.6: Unmitigated Average Daily and Maximum Annual Emissions for the Maximum Residential Scenario During Construction

	Average Daily Emissions (lb/day)			
	ROG	**NOx**	**PM_{10}**	**$PM_{2.5}$**
Phases 1 and 2 Construction	**22**	**42**	**1.9**	**1.8**
Significance Threshold	54	54	82	54
Above Threshold?	No	No	No	No
Phase 2 Construction (Post-Phase 1)	23	33	1.6	1.5
Phase 1 Operation	10	6.0	3.1	1.1
Phase 2 Total	**33**	**39**	**4.7**	**2.6**
Significance Threshold	54	54	82	54
Above Threshold?	No	No	No	No
Phase 3 Construction	21	28	1.2	1.1
Phases 1 and 2 Operation	65	47	29	9.5
Phase 3 Total	**86**	**75**	**31**	**11**
Significance Threshold	54	54	82	54
Above Threshold?	**Yes**	**Yes**	No	No
Phase 4 Construction	25	24	0.9	0.9
Phases 1, 2, and 3 Operation	102	64	49	16
Phase 4 Total	**127**	**88**	**50**	**17**
Significance Threshold	54	54	82	54
Above Threshold?	**Yes**	**Yes**	No	No
Phase 5 Construction	12	18	0.7	0.6
Phases 1, 2, 3, and 4 Operation	156	93	81	26
Phase 5 Total	**168**	**111**	**82**	**27**
Significance Threshold	54	54	82	54
Above Threshold?	**Yes**	**Yes**	No	No

Table 4.G.6 Continued

	Maximum Annual Emissions (ton/year)			
	ROG	**NOx**	**PM_{10}**	**$PM_{2.5}$**
Phases 1 and 2 Construction	**4.6**	**8.2**	**0.34**	**0.32**
Significance Threshold	10	10	15	10
Above Threshold?	No	No	No	No
Phase 2 Construction (Post-Phase 1)	4.6	5.0	0.23	0.22
Phase 1 Operation	1.8	1.1	0.56	0.19
Phase 2 Total	**6.4**	**6.1**	**0.79**	**0.41**
Significance Threshold	10	10	15	10
Above Threshold?	No	No	No	No
Phase 3 Construction	5.1	3.7	0.16	0.15
Phases 1 and 2 Operation	12	8.6	5.4	1.7
Phase 3 Total	**17**	**12**	**5.6**	**1.9**
Significance Threshold	10	10	15	10
Above Threshold?	**Yes**	**Yes**	No	No
Phase 4 Construction	6.2	3.6	0.13	0.12
Phase 1, 2, and 3 Operation	19	12	9.0	2.9
Phase 4 Total	**25**	**16**	**9.1**	**3.0**
Significance Threshold	10	10	15	10
Above Threshold?	**Yes**	**Yes**	No	No
Phase 5 Construction	2.9	2.7	0.11	0.10
Phases 1, 2, 3, and 4 Operation	29	17	15	4.7
Phase 5 Total	**32**	**20**	**15**	**4.8**
Significance Threshold	10	10	15	10
Above Threshold?	**Yes**	**Yes**	Yes	No

Notes: Bolded numerical values are totals during construction of a given phase with the addition of operational emissions from previous phases. If the total exceeds a threshold, then the exceedance is identified by a bolded "Yes" response.

For each construction phase, annual emissions are divided over the number of construction days for the given phase, to determine the average daily emissions. Phases 1 and 2 would be constructed concurrently. Phase durations as estimated by the applicant were 780 days for all phases except Phase 1 which would be less intensive. Phase 1 duration estimatd using CalEEMod default values as this data was not available.

Source: ESA, 2016

Table 4.G.7: Unmitigated Average Daily and Maximum Annual Emissions for the Maximum Commercial Scenario During Construction

	Average Daily Emissions (lb/day)			
	ROG	**NOx**	**PM_{10}**	**$PM_{2.5}$**
Phases 1 and 2 Construction	**24**	**42**	**1.9**	**1.8**
Significance Threshold	54	54	82	54
Above Threshold?	No	No	No	No
Phase 2 Construction (Post-Phase 1)	25	34	1.6	1.5
Phase 1 Operation	10	6.0	3.1	1.1
Phase 2 Total	**35**	**40**	**4.7**	**2.6**
Significance Threshold	54	54	82	54
Above Threshold?	No	No	No	No
Phase 3 Construction	20	28	1.2	1.1
Phases 1 and 2 Operation	70	49	32	10
Phase 3 Total	**90**	**77**	**33**	**11**
Significance Threshold	54	54	82	54
Above Threshold?	**Yes**	**Yes**	No	No
Phase 4 Construction	21	24	0.9	0.9
Phase 1, 2, and 3 Operation	115	73	58	18
Phase 4 Total	**136**	**97**	**59**	**19**
Significance Threshold	54	54	82	54
Above Threshold?	**Yes**	**Yes**	No	No
Phase 5 Construction	10	18	0.7	0.6
Phase 1, 2, 3, and 4 Operation	161	93	88	27
Phase 5 Total	**171**	**111**	**89**	**28**
Significance Threshold	54	54	82	54
Above Threshold?	**Yes**	**Yes**	**Yes**	No

Table 4.G.7 Continued

	Maximum Annual Emissions (ton/year)			
	ROG	**NOx**	**PM_{10}**	**$PM_{2.5}$**
Phases 1 and 2 Construction	**5.1**	**8.2**	**0.33**	**0.32**
Significance Threshold	10	10	15	10
Above Threshold?	No	No	No	No
Phase 2 Construction (Post-Phase 1)	5.0	5.2	0.24	0.23
Phase 1 Operation	1.8	1.1	0.56	0.19
Phase 2 Total	**6.8**	**6.3**	**0.80**	**0.42**
Significance Threshold	10	10	15	10
Above Threshold?	No	No	No	No
Phase 3 Construction	5.0	3.8	0.16	0.15
Phases 1 and 2 Operation	13	9.0	5.9	1.9
Phase 3 Total	**18**	**13**	**6.1**	**2.1**
Significance Threshold	10	10	15	10
Above Threshold?	**Yes**	**Yes**	No	No
Phase 4 Construction	5.2	3.6	0.13	0.12
Phases 1, 2, and 3 Operation	21	13	11	3.3
Phase 4 Total	**26**	**17**	**11**	**3.4**
Significance Threshold	10	10	15	10
Above Threshold?	**Yes**	**Yes**	**Yes**	No
Phase 5 Construction	2.3	2.8	0.11	0.10
Phases 1, 2, 3, and 4 Operation	30	17	16	4.9
Phase 5 Total	**32**	**20**	**16**	**5.0**
Significance Threshold	10	10	15	10
Above Threshold?	**Yes**	**Yes**	**Yes**	No

Notes: Bolded numerical values are totals during construction of a given phase with the addition of operational emissions from previous phases. If the total exceeds a threshold, then the exceedance is identified by a bolded "Yes" response.

For each construction phase, annual emissions are divided over the number of construction days for the given phase, to determine the average daily emissions. Phases 1 and 2 would be constructed concurrently. Phase durations as estimated by the applicant were 780 days for all phases except Phase 1 which would be less intensive. Phase 1 duration estimated using CalEEMod default values as this data was not available.

Source: ESA, 2016

Construction of Phase 4 when considered with occupancy and operation of earlier phases would result in emissions of ROG and NOx that would exceed significance thresholds, while emissions of PM_{10} and $PM_{2.5}$ would be below the applicable thresholds. Construction of Phase 5 when considered with occupancy and operation of earlier phases would result in emissions of ROG, NOx, and PM_{10} that would exceed significance thresholds, while emissions of $PM_{2.5}$ would be below the applicable threshold.

Therefore, criteria pollutant emissions during simultaneous construction and operation of the Maximum Commercial Scenario would be significant.

Generally the Maximum Commercial Scenario results in a marginal 1 to 6 percent greater emissions than the Maximum Residential Scenario, depending on the year analyzed and whether average pounds per day or maximum tons per year are considered. Regardless, under the Maximum Commercial Scenario emissions of ROG, NOx, and PM_{10} would exceed significance thresholds, while emissions of $PM_{2.5}$ would be below the applicable threshold

Health Implications of Significant Impacts Related to Emissions of Ozone Precursors and PM_{10}

ROG and NOx are ozone precursors, and the main health concern of exposure to ground-level ozone is effects on the respiratory system, especially on lung function. Several factors influence these health impacts, including the concentrations of ground-level ozone in the atmosphere, the duration of exposure, average volume of air breathed per minute, the length of intervals between short-term exposures, and the sensitivity of the person to the exposure.[55,56] The concentration of ground-level ozone in the atmosphere is influenced by the volume of air available for dilution, the temperature, and the intensity of ultraviolet light. In the Bay Area, the worst case conditions for ozone formation occur in the summer and early fall on warm, windless, sunny days.[57]

PM_{10} consists of particulates that are small enough to be inhaled into the deepest parts of the human lung and can cause adverse health effects. According to the CARB, studies in the United States and elsewhere "have demonstrated a strong link between elevated particulate levels and premature deaths, hospital admissions, emergency room visits, and asthma attacks," and studies

[55] The World Bank Group, *Pollution Prevention and Abatement Handbook 1998: Toward Cleaner Production*, pp. 227–230, 1999. Available online at www.ifc.org/wps/wcm/connect/dd7c9800488553e0b0b4f26a6515bb18/HandbookGroundLevelOzone.pdf?MOD=AJPERES. Accessed January 19, 2016.

[56] U.S. Environmental Protection Agency, *Air Quality Guide for Ozone*, March 2008. Available online at www.airnow.gov/index.cfm?action=pubs.aqiguideozone. Accessed January 19, 2016.

[57] BAAQMD, *Air Pollutants Regulated by the Air District*. Available online at http://hank.baaqmd.gov/dst/pollutants.htm. Accessed January 19, 2016.

of children's health in California have demonstrated that particle pollution "may significantly reduce lung function growth in children." The CARB also reports that statewide attainment of PM standards could prevent thousands of premature deaths, lower hospital admissions for cardiovascular and respiratory disease and asthma-related emergency room visits, and avoid hundreds of thousands of episodes of respiratory illness in California.[58] High levels of PM can exacerbate chronic respiratory ailments, such as bronchitis and asthma, and have been associated with increased emergency room visits and hospital admissions. $PM_{2.5}$ is of particular concern because epidemiologic studies have demonstrated that people who live near freeways and high-traffic roadways have poorer health outcomes, including increased asthma symptoms and respiratory infections and decreased pulmonary function and lung development in children.[59]

Given these various factors, it is difficult to predict the magnitude of health effects from the project's exceedance of significance criteria for regional ROG, NOx, and PM_{10} emissions. The increase in emissions associated with the Proposed Project represents a fraction of total SFBAAB regional ROG emissions (up to 186 pounds per day compared to 265 tons per day in the SFBAAB region in 2012),[60] NOx emissions (up to 111 pounds per day compared to 318 tons per day in the SFBAAB region in 2012), and PM_{10} emissions (up to 165 pounds per day compared to 119 tons per day in the SFBAAB region in 2012). Although Table 4.G.1, p. 4.G.3, indicates that the most stringent applicable ozone standards were not exceeded at the Potrero Hill monitoring station between 2011 and 2015, the SFBAAB region experienced an average of 8.4 days of exceedance per year between 2011 and 2015.[61] The PM_{10} standard was exceeded on one day at the Potrero Hill monitoring station between 2011 and 2015. The Proposed Project's ROG, NOx, and PM_{10} increases could contribute to new or exacerbated air quality violations in the SFBAAB region by contributing to more days of ozone or PM_{10} exceedance or result in AQI values that are unhealthy for sensitive groups and other populations. As shown in Table 4.G.3, p. 4.G.10, the SFBAAB has averaged between 8 and 15 days per year that are considered unhealthy for sensitive groups and had 3 unhealthy (red) days in the last 5 years for which data are available.

[58] CARB, *Recent Research Findings: Health Effects of Particulate Matter and Ozone Air Pollution*, November 2007

[59] San Francisco Department of Public Health, *Assessment and Mitigation of Air Pollutant Health Effect from Intra-urban Roadways: Guidance for Land Use Planning and Environmental Review*, May 2008, p. 7.

[60] CARB, *The California Almanac of Emissions and Air Quality – 2013 Edition*, May 21, 2014. Available online at www.arb.ca.gov/aqd/almanac/almanac13/almanac13.htm. Accessed January 19, 2016.

[61] BAAQMD, *Annual Bay Area Air Quality Summaries*, 2014. Available online at http://www.baaqmd.gov/about-air-quality/air-quality-summaries. Accessed January 19, 2016.

On unhealthy days, persons are recommended to avoid both prolonged and heavy-exertion outdoor activities.[62]

Mitigation of Construction-Related and Operational Air Quality Impacts

To address ROG, NOx, and PM_{10} emissions that would occur during construction of the Proposed Project under both the Maximum Residential and Maximum Commercial Scenarios, Mitigation Measure M-AQ-1a: Construction Emissions Minimization, shown below, has been identified and would apply during construction of Phases 3, 4, and 5, or after build-out of 1.3 million gross square feet of development, whichever comes first.

Mitigation Measure M-AQ-1a: Construction Emissions Minimization

A. *Construction Emissions Minimization Plan.* Prior to issuance of a site permit, the project sponsors shall submit a Construction Emissions Minimization Plan (Plan) to the Environmental Review Officer (ERO) for review and approval by an Environmental Planning Air Quality Specialist. The Plan shall detail project compliance with the following requirements:

1. Where access to alternative sources of power is available, portable diesel generators used during construction shall be prohibited. Where portable diesel engines are required because alternative sources of power are not available, the diesel engine shall meet the EPA or CARB Tier 4 off-road emission standards and be fueled with renewable diesel (at least 99 percent renewable diesel or R99), if commercially available, as defined below.

2. All off-road equipment greater than 25 horsepower that operates for more than 20 total hours over the entire duration of construction activities shall have engines that meet the EPA or CARB Tier 4 off-road emission standards and be fueled with renewable diesel (at least 99 percent renewable diesel or R99), if commercially available. If engines that comply with Tier 4 off-road emission standards are not commercially available, then the project sponsors shall provide the next cleanest piece of off-road equipment as provided by the step-down schedules in Table M-AQ-1.

[62] U.S. Environmental Protection Agency, *Air Quality Index, A Guide to Air Quality and Your Health*, February 2014. Available online at www.epa.gov/airnow/aqi_brochure_02_14.pdf. Accessed January 19, 2016.

Table M.AQ.1: Off-Road Equipment Compliance Step-Down Schedule

Compliance Alternative	Engine Emission Standard	Emissions Control
1	Tier 3	CARB PM VDECS (85%)[1]
2	Tier 2	CARB PM VDECS (85%)

How to use the table: If the requirements of (A)(2) cannot be met, then the project sponsors would need to meet Compliance Alternative 1. Should the project sponsors not be able to supply off-road equipment meeting Compliance Alternative 1, then Compliance Alternative 2 would need to be met.

[1] CARB, Currently Verified Diesel Emission Control Strategies (VDECS). Available online at http://www.arb.ca.gov/diesel/verdev/vt/cvt.htm. Accessed January 14, 2016.

i. With respect to Tier 4 equipment, "commercially available" shall mean the availability taking into consideration factors such as: (i) critical path timing of construction; and (ii) geographic proximity of equipment to the project site.

ii. With respect to renewable diesel, "commercially available" shall mean the availability taking into consideration factors such as: (i) critical path timing of construction; (ii) geographic proximity of fuel source to the project site; and (iii) cost of renewable diesel is within 10 percent of Ultra Low Sulfur Diesel #2 market price.

iii. The project sponsors shall maintain records concerning its efforts to comply with this requirement. Should the project sponsor determine either that an off-road vehicle that meets Tier 4 emissions standards or that renewable diesel are not commercially available, the project sponsor shall submit documentation to the satisfaction of the ERO and, for the former condition, shall identify the next cleanest piece of equipment that would be use, in compliance with Table M-AQ-1-1.

3. The project sponsors shall ensure that future developers or their contractors require the idling time for off-road and on-road equipment be limited to no more than 2 minutes, except as provided in exceptions to the applicable State regulations regarding idling for off-road and on-road equipment. Legible and visible signs shall be posted in multiple languages (English, Spanish, and Chinese) in designated queuing areas and at the construction site to remind operators of the 2-minute idling limit.

4. The project sponsors shall require that each construction contractor mandate that construction operators properly maintain and tune equipment in accordance with manufacturer specifications.

5. The Plan shall include best available estimates of the construction timeline by phase with a description of each piece of off-road equipment required for every construction phase and shall be updated pursuant to the reporting requirements in Section B below. Reporting requirements for off-road equipment descriptions

and information shall include as much detail as is available, but are not limited to: equipment type, equipment manufacturer, equipment identification number, engine model year, engine certification (Tier rating), horsepower, engine serial number, and expected fuel usage and hours of operation. For Verified Diesel Emission Control Strategies (VDECS) installed, descriptions and information shall include technology type, serial number, make, model, manufacturer, CARB verification number level, and installation date and hour meter reading on installation date. The Plan shall also indicate whether renewable diesel will be used to power the equipment. The Plan shall also include anticipated fuel usage and hours of operation so that emissions can be estimated.

6. The project sponsors and their construction contractors shall keep the Plan available for public review on site during working hours. Each construction contractor shall post at the perimeter of the project site a legible and visible sign summarizing the requirements of the Plan. The sign shall also state that the public may ask to inspect the Plan at any time during working hours, and shall explain how to request inspection of the Plan. Signs shall be posted on all sides of the construction site that face a public right-of-way. The project sponsors shall provide copies of the Plan to members of the public as requested.

B. *Reporting.* Quarterly reports shall be submitted to the ERO indicating the construction activities undertaken and information about the off-road equipment used, including the information required in Section A(5). In addition, reporting shall include the approximate amount of renewable diesel fuel used.

Within 6 months of the completion of all project construction activities, the project sponsors shall submit to the ERO a final report summarizing construction activities. The final report shall indicate the start and end dates and duration of each construction phase. The final report shall include detailed information required in Section A(5). In addition, reporting shall include the actual amount of renewable diesel fuel used.

C. *Certification Statement and On-site Requirements.* Prior to the commencement of construction activities, the project sponsors shall certify through submission of city-standardized forms (1) compliance with the Plan, and (2) all applicable requirements of the Plan have been incorporated into contract specifications.

Residual Impact with Implementation of Mitigation Measure M-AQ-1a

Mitigation Measure M-AQ-1a would result in a reduction of construction-related ROG emissions ranging from 8 to 10 percent, depending on the construction phase. Emissions of construction-related NOx would be reduced by 54 to 64 percent and emissions of construction-related PM_{10} would be reduced between 72 and 83 percent. Construction emissions alone would be less than significance thresholds. Emissions of simultaneous operational and construction emissions would still exceed thresholds but would be substantially reduced by this measure. Additionally, as discussed later in Impact AQ-3, particulate emission reductions from this measure are necessary to reduce potential health risk impacts to on-site receptors to less than significant levels. Implementation of this mitigation measure would not result in any adverse environmental effects.

To address emissions that would occur during operation of the Proposed Project, the following mitigation measures, have been identified: M-AQ-1b: Diesel Backup Generator Specifications; M-AQ-1c: Use Low- and Super-Compliant VOC Architectural Coatings in Maintaining Buildings through Covenants Conditions and Restrictions (CC&Rs) and Ground Lease; M-AQ-1d: Promote Use of Green Consumer Products; M-AQ-1e: Electrification of Loading Docks; M-AQ-1f: Transportation Demand Management; M-AQ-1g: Additional Mobile Source Control Measures; and M-AQ-1h: Offset Operational Emissions.

M-AQ-1b: Diesel Backup Generator Specifications

To reduce NOx associated with operation of the Maximum Commercial or Maximum Residential Scenarios, the project sponsors shall implement the following measures.

A. All new diesel backup generators shall:

   1. have engines that meet or exceed CARB Tier 4 off-road emission standards which have the lowest NOx emissions of commercially available generators; and

   2. be fueled with renewable diesel, if commercially available, which has been demonstrated to reduce NOx emissions by approximately 10 percent.

B. All new diesel backup generators shall have an annual maintenance testing limit of 50 hours, subject to any further restrictions as may be imposed by the BAAQMD in its permitting process.

C. For each new diesel backup generator permit submitted to BAAQMD for the project, anticipated location, and engine specifications shall be submitted to the San Francisco Planning Department for review and approval prior to issuance of a permit for the generator from the San Francisco DBI or the Port. Once operational, all diesel backup generators shall be maintained in good working order for the life of the equipment and any future replacement of the diesel backup generators shall be required to be consistent with these emissions specifications. The operator of the facility at which the generator is located shall maintain records of the testing schedule for each diesel backup generator for the life of that diesel backup generator and provide this information for review to the Planning Department within 3 months of requesting such information.

Residual Impact with Implementation of Mitigation Measure M-AQ-1b

Mitigation Measure M-AQ-1b would result in an 86 percent reduction of ROG emissions from generators. Emissions of NOx emissions from generators would be reduced by 89 percent and emissions of PM_{10} would be reduced by 98 percent. Operational emissions would still exceed thresholds as the overall contribution of generator emissions to total project emissions is very small. However, as discussed later in Impact AQ-3, particulate emission reductions from this measure are necessary to reduce potential health risk impacts to on-site receptors to less than significant levels. Implementation of this mitigation measure would not result in any adverse environmental effects.

M-AQ-1c: Use Low- and Super-Compliant VOC Architectural Coatings in Maintaining Buildings through Covenants Conditions and Restrictions (CC&Rs) and Ground Lease

The project sponsors shall require all developed parcels to include within their CC&Rs and/or ground leases requirements for all future interior spaces to be repainted only with "Super-Compliant" Architectural Coatings (http://www.aqmd.gov/home/regulations/compliance/architectural-coatings/super-compliant-coatings). "Low-VOC" refers to paints that meet the more stringent regulatory limits in South Coast AQMD Rule 1113; however, many manufacturers have reformulated to levels well below these limits. These are referred to as "Super-Compliant" Architectural Coatings.

Residual Impact with Implementation of Mitigation Measure M-AQ-1c

Regulation 8 Rule 3 of the BAAQMD places limits on the VOC content of paint and other architectural coatings, and use of lower VOC coatings available to consumers can further reduce operational ROG emissions. Low- and Super-Compliant VOC paints are manufactured and sold by numerous companies. ROG emissions associated with maintenance application of paint and other architectural coatings represent a relatively small percentage (8 percent) of total project ROG emissions. Mitigation Measure M-AQ-1c would reduce ROG emissions associated with maintenance application of paint and other architectural coatings by 31 percent. Operational emissions would still exceed thresholds as the overall contribution of architectural coating emissions to total project emissions is comparatively small. Should the applicant commit to requiring use of no-VOC interior paints, ROG emissions from maintenance application of paint and other architectural coatings could be further reduced by up to 90 percent. Implementation of this mitigation measure would not result in any adverse environmental effects.

M-AQ-1d: Promote Use of Green Consumer Products

The project sponsors shall provide education for residential and commercial tenants concerning green consumer products. Prior to receipt of any certificate of final occupancy and every 5 years thereafter, the project sponsors shall work with the San Francisco Department of Environment (SF Environment) to develop electronic correspondence to be distributed by email annually to residential and/or commercial tenants of each building on the project site that encourages the purchase of consumer products that generate lower than typical VOC emissions. The correspondence shall encourage environmentally preferable purchasing and shall include contact information and website links to SF Approved. This website also may be used as an informational resource by businesses and residents.

Residual Impact with Implementation of Mitigation Measure M-AQ-1d

SF Approved (sfapproved.org) is administrated by SF Environment, and identifies products and services that are required and recommended for use by City departments in connection with the City's Precautionary Purchasing Ordinance (Section 203 of the San Francisco Environment

Code). Mitigation Measure M-AQ-1d would reduce ROG emissions associated with use of consumer products. Given that the project applicant does not have authority to require use of certain products, no reduction in ROG emissions can be estimated from this measure. Implementation of this mitigation measure would not result in any adverse environmental effects.

M-AQ-1e: Electrification of Loading Docks

The project sponsors shall ensure that loading docks for retail, light industrial, or warehouse uses that will receive deliveries from refrigerated transport trucks incorporate electrification hook-ups for transportation refrigeration units to avoid emissions generated by idling refrigerated transport trucks.

Residual Impact with Implementation of Mitigation Measure M-AQ-1e

Mitigation Measure M-AQ-1e would reduce emissions of ROG, NOx, and PM_{10}. Given that the specific land uses are not determined, no reduction in emissions can be reliably estimated from this measure at this time. Implementation of this mitigation measure would not result in any adverse environmental effects.

M-AQ-1f: Transportation Demand Management

The project sponsors shall prepare and implement a Transportation Demand Management (TDM) Plan with a goal of reducing estimated one-way vehicle trips by 20 percent compared to the total number of one-way vehicle trips identified in the project's Transportation Impact Study at project build-out. To ensure that this reduction goal could be reasonably achieved, the TDM Plan will have a monitoring goal of reducing by 20 percent the one-way vehicle trips calculated for each building that has received a Certificate of Occupancy and is at least 75% occupied compared to the one-way vehicle trips anticipated for that building based on anticipated development on that parcel, using the trip generation rates contained within the project's Transportation Impact Study. There shall be a Transportation Management Association that would be responsible for the administration, monitoring, and adjustment of the TDM Plan. The project sponsor is responsible for identifying the components of the TDM Plan that could reasonably be expected to achieve the reduction goal for each new building associated with the project, and for making good faith efforts to implement them. The TDM Plan may include, but is not limited to, the types of measures summarized below for explanatory example purposes. Actual TDM measures selected should include those from the TDM Program Standards, which describe the scope and applicability of candidate measures in detail and include:

- Active Transportation: Provision of streetscape improvements to encourage walking, secure bicycle parking, shower and locker facilities for cyclists, subsidized bike share memberships for project occupants, bicycle repair and maintenance services, and other bicycle-related services;
- Car-Share: Provision of car-share parking spaces and subsidized memberships for project occupants;

- Delivery: Provision of amenities and services to support delivery of goods to project occupants;
- Family-Oriented Measures: Provision of on-site childcare and other amenities to support the use of sustainable transportation modes by families;
- High-Occupancy Vehicles: Provision of carpooling/vanpooling incentives and shuttle bus service;
- Information and Communications: Provision of multimodal wayfinding signage, transportation information displays, and tailored transportation marketing services;
- Land Use: Provision of on-site affordable housing and healthy food retail services in underserved areas;
- Parking: Provision of unbundled parking, short term daily parking provision, parking cash out offers, and reduced off-street parking supply.

The TDM Plan shall include specific descriptions of each measure, including the degree of implementation (e.g., for how long will it be in place, how many tenants or visitors will it benefit, on which locations within the site will it be placed, etc.), and the population that each measure is intended to serve (e.g. residential tenants, retail visitors, employees of tenants, visitors, etc.). It shall also include a commitment to monitoring of person and vehicle trips traveling to and from the project site to determine the TDM Plan's effectiveness, as outlined below.

The TDM Plan shall be submitted to the City to ensure that components of the TDM Plan intended to meet the reduction target are shown on the plans and/or ready to be implemented upon the issuance of each certificate of occupancy.

TDM Plan Monitoring and Reporting: The Transportation Management Association, through an on-site Transportation Coordinator, shall collect data and make monitoring reports available for review and approval by the Planning Department staff.

- Timing: Monitoring data shall be collected and reports shall be submitted to Planning Department staff every year (referred to as "reporting periods"), until five consecutive reporting periods display the project has met the reduction goal, at which point monitoring data shall be submitted to Planning Department staff once every three years. The first monitoring report is required 18 months after issuance of the First Certificate of Occupancy for buildings that include off-street parking or the establishment of surface parking lots or garages that bring the project's total number of off-street parking spaces to greater than or equal to 500. Each trip count and survey (see below for description) shall be completed within 30 days following the end of the applicable reporting period. Each monitoring report shall be completed within 90 days following the applicable reporting period. The timing shall be modified such that a new monitoring report shall be required 12 months after adjustments are made to the TDM Plan in order to meet the reduction goal, as may be required in the "TDM Plan Adjustments" heading below. In addition, the timing may be modified by the Planning Department as needed to consolidate this requirement with other monitoring and/or reporting requirements for the project.

- Components: The monitoring report, including trip counts and surveys, shall include the following components OR comparable alternative methodology and components as approved or provided by Planning Department staff:
    - Trip Count and Intercept Survey: Trip count and intercept survey of persons and vehicles arriving and leaving the project site for no less than two days of the reporting period between 6:00 a.m. and 8:00 p.m. One day shall be a Tuesday, Wednesday, or Thursday during one week without federally recognized holidays, and another day shall be a Tuesday, Wednesday, or Thursday during another week without federally recognized holidays. The trip count and intercept survey shall be prepared by a qualified transportation or qualified survey consultant and the methodology shall be approved by the Planning Department prior to conducting the components of the trip count and intercept survey. It is anticipated that the Planning Department will have a standard trip count and intercept survey methodology developed and available to project sponsors at the time of data collection.
    - Travel Demand Information: The above trip count and survey information shall be able to provide travel demand analysis characteristics (work and non-work trip counts, origins and destinations of trips to/from the project site, and modal split information) as outlined in the Planning Department's *Transportation Impact Analysis Guidelines for Environmental Review*, October 2002, or subsequent updates in effect at the time of the survey.
    - Documentation of Plan Implementation: The TDM Coordinator shall work in conjunction with the Planning Department to develop a survey (online or paper) that can be reasonably completed by the TDM Coordinator and/or TMA staff to document the implementation of TDM program elements and other basic information during the reporting period. This survey shall be included in the monitoring report submitted to Planning Department staff.
    - Assistance and Confidentiality: Planning Department staff will assist the TDM Coordinator on questions regarding the components of the monitoring report and shall ensure that the identity of individual survey responders is protected.

TDM Plan Adjustments. The TDM Plan shall be adjusted based on the monitoring results if three consecutive reporting periods demonstrate that measures within the TDM Plan are not achieving the reduction goal. The TDM Plan adjustments shall be made in consultation with Planning Department staff and may require refinements to existing measures (e.g., change to subsidies, increased bicycle parking), inclusion of new measures (e.g., a new technology), or removal of existing measures (e.g., measures shown to be ineffective or induce vehicle trips). If three consecutive reporting periods' monitoring results demonstrate that measures within the TDM Plan are not achieving the reduction goal, the TDM Plan adjustments shall occur within 270 days following the last consecutive reporting period. The TDM Plan adjustments shall occur until three consecutive reporting periods' monitoring results demonstrate that the reduction goal is achieved. If the TDM Plan does not achieve the reduction goal then the City shall impose additional measures to reduce vehicle trips as prescribed under the development agreement, which may include restriction of additional off-street parking spaces beyond those previously established on the site, capital or operational improvements intended to reduce vehicle trips from the project, or other measures that support sustainable trip

making, until three consecutive reporting periods' monitoring results demonstrate that the reduction goal is achieved.

Residual Impact with Implementation of Mitigation Measure M-AQ-1f

Mitigation Measure M-AQ-1f would reduce mobile source emissions of ROG, NOx, and PM_{10}. Quantification of emission reduction from this measure is based on a 20 percent reduction target for vehicle trips. Because most measures are expected to be employer-based, the 20 percent reduction in vehicle trips was calculated for weekday trips only. Although emission reductions would be substantial, operational emissions would still exceed thresholds. Implementation of this mitigation measure would encourage sustainable modes of transportation and the use of single-occupant vehicles would be discouraged, which would increase the use of taxi/rideshare, transit, bicycle and pedestrian modes. The impacts resulting from such a shift of vehicle trips to other modes are difficult to predict. If many vehicle trips were to shift to transit and pedestrian trips, it is possible that this mitigation measure could contribute to significant and unavoidable transit impacts (as discussed in Section 4.E, Transportation and Circulation), but not likely to a substantial degree. The potential for contributions to these other transportation modes as a result of this mitigation measure is speculative because it is unknown which specific TDM meausres would ultimately be selected. Moreover, current literature does not document which travel modes people would choose in respose to implementation of several TDM meaures. The proposed project would be required to pay the Transportation Sustainability Fee and fees to SFMTA as part of Mitigation Measure M-TR-5, to increase capacity on the 48 Quintara/24th Street bus route, pp. 4.E.91-4.E.93. Therefore, implementation of this mitigation measure would not cause any significant effects in addition to those that would result from implementation of the Proposed Project.

Mitigation Measure M-AQ-1g: Additional Mobile Source Control Measures

The following Mobile Source Control Measures from the BAAQMD's 2010 Clean Air Plan shall be implemented:

- Promote use of clean fuel-efficient vehicles through preferential (designated and proximate to entry) parking and/or installation of charging stations beyond the level required by the City's Green Building code, from 8 to 20 percent.
- Promote zero-emission vehicles by requesting that any car share program operator include electric vehicles within its car share program to reduce the need to have a vehicle or second vehicle as a part of the TDM program that would be required of all new developments.

Residual Impact with Implementation of Mitigation Measure M-AQ-1g

Mitigation Measure M-AQ-1g would marginally reduce mobile source emissions of ROG, NOx, and PM_{10}. No additional emissions reductions were quantified from implementation of this

mitigation measure. Implementation of this mitigation measure would not result in any adverse environmental effects.

Mitigation Measure M-AQ-1h: Offset Operational Emissions

Prior to issuance of the final certificate of occupancy for the final building associated with Phase 3 or after build out of 1.3 million square feet of development, whichever comes first, the project sponsors, with the oversight of the ERO, shall either:

(1) Directly fund or implement a specific offset project within San Francisco to achieve reductions the one-time reduction of 25 tons per year of ozone precursors and 1 ton of PM_{10}. This offset is intended to offset the estimated annual tonnage of operational ozone precursor and PM_{10} emissions under the buildout scenario realized at the time of completion of Phase 3. To qualify under this mitigation measure, the specific emissions offset project must result in emission reductions within the SFBAAB that would not otherwise be achieved through compliance with existing regulatory requirements. A preferred offset project would be one implemented locally within the City and County of San Francisco. Prior to implementation of the offset project, the project sponsors must obtain the ERO's approval of the proposed offset project by providing documentation of the estimated amount of emissions of ROG, NOx, and PM_{10} to be reduced (tons per year) within the SFBAAB from the emissions reduction project(s). The project sponsors shall notify the ERO within 6 months of completion of the offset project for verification; or

(2) Pay a one-time mitigation offset fee to the BAAQMD's Strategic Incentives Division in an amount no less than $18,030 per weighted ton of ozone precursors and PM_{10} per year above the significance threshold, calculated as the difference between total annual emissions at build out under mitigated conditions and the significance threshold in the EIR air quality analysis, which is 25 tons per year of ozone precursors and 1 ton of PM_{10}, plus a 5 percent administrative fee, to fund one or more emissions reduction projects within the SFBAAB. This one-time fee is intended to fund emissions reduction projects to offset the estimated annual tonnage of operational ozone precursor and PM_{10} emissions under the buildout scenario realized at the time of completion of Phase 3, or after completion of 1.3 million sf of development, whichever comes first. Documentation of payment shall be provided to the ERO.

Acceptance of this fee by the BAAQMD shall serve as an acknowledgment and commitment by the BAAQMD to implement one or more emissions reduction project(s) within 1 year of receipt of the mitigation fee to achieve the emission reduction objectives specified above, and provide documentation to the ERO and to the project sponsors describing the project(s) funded by the mitigation fee, including the amount of emissions of ROG, NOx, and PM_{10} reduced (tons per year) within the SFBAAB from the emissions reduction project(s). If there is any remaining unspent portion of the mitigation offset fee following implementation of the emission reduction project(s), the project sponsors shall be entitled to a refund in that amount from the BAAQMD. To qualify under this mitigation measure, the specific emissions retrofit project must result in emission reductions within the SFBAAB that would not otherwise be achieved through compliance with existing regulatory requirements.

Residual Impact with Implementation of Mitigation Measure M-AQ-1h

Mitigation Measure M-AQ-1h would offset emissions of ROG, NOx, and PM_{10} that would exceed the respective thresholds of significance for these pollutants. Implementation of the emissions reduction project could be conducted by the BAAQMD and is outside the jurisdiction and control of the City and not fully within the control of the project sponsor. M-AQ-1h also allows the project sponsor to directly fund or implement an offset project; however, no such project has yet been identified. Therefore, the residual impact of project emissions during construction is conservatively considered *significant and unavoidable with mitigation*, acknowledging the assumption that the project sponsor would implement Mitigation Measures M-AQ-a though M-AQ-1h (Emission Offsets). Although the specific offset projects are not known, it is anticipated that implementation of this mitigation measure would not result in any adverse environmental effects.

Residual Impact with Implementation of All Identified Mitigation Measures

Implementation of Mitigation Measure M-AQ-1a (Construction Emissions Minimization)**,** above, would substantially reduce construction-related emissions of ROG, NOx, and PM_{10}. The measure would require use of off-road equipment to meet the most tringent emission standards available and would reduce construction-related emissions of ROG, NOx, and PM_{10}. Mitigated daily engine exhaust emissions from construction activities associated with the Proposed Project with compliance with Tier 4 requirements are compared with emission significance thresholds in Table 4.G.8 for the Maximum Residential Scenario during Construction and in Table 4.G.9 for the Maximum Commercial Scenario during Construction. Both these tables assume mitigation reductions as previously described for each measure. As can be seen in these tables, criteria air pollutant emissions would remain significant during construction of Phases 3, 4, and 5 when operational emissions are also considered.

Mitigation Measures M-AQ-1b through M-AQ-1g above would reduce operational emissions associated with both the Maximum Residential Scenario and the Maximum Commercial Scenario. Quantifiable emission reductions from implementation of these measures are reflected in Tables 4.G.8 and 4.G.9 below for the Maximum Residential Scenario and the Maximum Commercial Scenario, respectively. Specifically, the following emissions reductions were quantified as a result of implementation of Mitigation Measures M-AQ-1b through M-AQ-1h:

- **M-AQ-1b: Diesel Backup Generator Specifications** – Quantification of the emission reduction from this measure is based on Tier 4 emission factors for emergency backup generators.
- **M-AQ-1c: Use Low- and Super-Compliant VOC Architectural Coatings in Maintaining Buildings through CC&Rs** – Quantification of the emission reduction from this measure for residential and commercial uses are conservatively based on 50

grams of ROG per liter for interior finsishes and 100 grams ROG per liter for exterior finishes rate for SCAQMD.

- **M-AQ-1d: Promote Use of Green Consumer Products** – Given that the project applicant does not have authority to require use of certain products, no reduction in ROG emissions are estimated from this measure.
- **M-AQ-1e: Electrification of Loading Docks** – Given that the specific land uses are not determined, no reduction in emissions can be reliably estimated from this measure at this time.
- **M-AQ-1f: Transportation Demand Management** – Quantification of the emission reduction from this measure is based on a 20 percent reduction target for vehicle trips. Because most measures are expected to be employer-based, the 20 percent reduction in vehicle trips were only taken for weekday employee trips.
- **Mitigation Measure M-AQ-1g: Additional Mobile Source Control Measures**- No additional emissions reductions were estimated from implementation of these mitigation measures.

Emissions of ROG and NOx during construction of Phases 3, 4, and 5 with consideration of concurrent operational emissions would remain significant even with implementation of Mitigation Measures M-AQ-1a through M-AQ-1g. Consequently, Mitigation Measure M-AQ-1h (Emissions Offsets) is identified to further reduce the residual pollutant emissions. Mitigation Measure M-AQ-1h would require the project sponsor to offset remaining emissions to below significance thresholds by funding the implementation of an offsite emissions reduction project in an amount sufficient to mitigate residual criteria pollutant emissions shown in Tables 4.G.8 and 4.G.9.

As specified in Mitigation Measure M-AQ-1h, offsetting of the project's emissions would follow completion of construction activities for Phases 1 and 2. If construction emissions were considered alone, without operational emissions, construction emissions would be less than significant. Consequently, emissions offsets would represent the necessary amount of offset required to also address operational emissions. Therefore, emissions reduction projects funded through Mitigation Measure M-AQ-1h would offset the regional criteria pollutant emissions generated by operation of the Proposed Project that would remain in excess of the applicable thresholds after implementation of the project-specific emission reductions required under Mitigation Measures M-AQ-1a through M-AQ-1g. If Mitigation Measure M-AQ-1h is implemented via a directly funded or implemented offset project, it could have the potential to reduce the impact to a less than significant level but only if the timing of the offsets could be documented prior to the occupancy of Phase 3 and ensured for the life of the project. Therefore, the residual impact of project emissions during construction is conservatively considered significant and unavoidable with mitigation, acknowledging the assumption that the project sponsor would implement Mitigation Measures M-AQ-1a though M-AQ-1h (Emission Offsets).

Table 4.G.8: Mitigated Average Daily and Maximum Annual Emissions for the Maximum Residential Scenario During Construction

	Average Daily Emissions (lb/day)			
	ROG	**NOx**	**PM_{10}**	**$PM_{2.5}$**
Phases 1 and 2 Construction[a]	**22**	**42**	**1.9**	**1.8**
Significance Threshold	54	54	82	54
Above Threshold?	No	No	No	No
Phase 2 Construction (Post-Phase 1)[a]	23	33	1.6	1.5
Phase 1 Operation	9.2	5.4	2.6	0.93
Phase 2 Total	**32**	**38**	**4.2**	**2.4**
Significance Threshold	54	54	82	54
Above Threshold?	No	No	No	No
Phase 3 Construction	19	10	0.21	0.20
Phases 1 and 2 Operation	53	37	21	7.1
Phase 3 Total	**72**	**47**	**21**	**7.1**
Significance Threshold	54	54	82	54
Above Threshold?	**Yes**	No	No	No
Phase 4 Construction	23	11	0.25	0.24
Phases 1, 2, and 3 Operation	93	57	42	14
Phase 4 Total	**116**	**68**	**42**	**14**
Significance Threshold	54	54	82	54
Above Threshold?	**Yes**	**Yes**	No	No
Phase 5 Construction	11	7.4	0.16	0.15
Phases 1, 2, 3, and 4 Operation	141	83	69	22
Phase 5 Total	**152**	**90**	**69**	**22**
Significance Threshold	54	54	82	54
Above Threshold?	**Yes**	**Yes**	No	No

Table 4.G.8 Continued

	Maximum Annual Emissions (ton/year)			
	ROG	**NOx**	**PM_{10}**	**$PM_{2.5}$**
Phases 1 and 2 Construction[a]	**4.6**	**8.2**	**0.34**	**0.32**
Significance Threshold	10	10	15	10
Above Threshold?	No	No	No	No
Phase 2 Construction (Post-Phase 1) [a]	4.6	5.0	0.23	0.22
Phase 1 Operation	1.7	1.0	0.48	0.17
Phase 2 Total	**6.3**	**6.0**	**0.71**	**0.39**
Significance Threshold	10	10	15	10
Above Threshold?	No	No	No	No
Phase 3 Construction	4.9	1.4	0.03	0.03
Phases 1 and 2 Operation	10	6.7	3.9	1.34
Phase 3 Total	**15**	**8.1**	**3.9**	**1.3**
Significance Threshold	10	10	15	10
Above Threshold?	**Yes**	No	No	No
Phase 4 Construction	6.0	1.7	0.04	0.04
Phases 1, 2, and 3 Operation	17	10	7.7	2.5
Phase 4 Total	**23**	**12**	**7.7**	**2.5**
Significance Threshold	10	10	15	10
Above Threshold?	**Yes**	**Yes**	No	No
Phase 5 Construction	2.7	1.1	0.02	0.02
Phases 1, 2, 3, and 4 Operation	26	15	13	4.0
Phase 5 Total	**29**	**16**	**13**	**4.0**
Significance Threshold	10	10	15	10
Above Threshold?	**Yes**	**Yes**	No	No

Notes: Bolded numerical values are totals during construction of a given phase with the addition of operational emissions from previous phases. If the total exceeds a threshold, then the exceedance is identified by a bolded "Yes" response.

For each construction phase, annual emissions are divided over the number of construction days for the given phase, to determine the average daily emissions. Phases 1 and 2 would be constructed concurrently. Phase durations as estimated by the applicant were 780 days for all phases except Phase 1 which would be less intensive. Phase 1 duration estimated using CalEEMod default values as these data were not available.

No mitigation is required until Phase 3 of construction. Consequently construction emissions for Phase 1 and Phase 2 are unmitigated.

Source: ESA, 2016

Table 4.G.9: Mitigated Average Daily and Maximum Annual Emissions for the Maximum Commercial Scenario During Construction

	Average Daily Emissions (lb/day)			
	ROG	**NOx**	**PM_{10}**	**$PM_{2.5}$**
Phases 1 and 2 Construction[a]	**24**	**42**	**1.9**	**1.8**
Significance Threshold	54	54	82	54
Above Threshold?	No	No	No	No
Phase 2 Construction (Post-Phase 1) [a]	25	34	1.6	1.5
Phase 1 Operation	9.2	5.4	2.6	0.93
Phase 2 Total	**34**	**40**	**4.2**	**2.6**
Significance Threshold	54	54	82	54
Above Threshold?	No	No	No	No
Phase 3 Construction	19	11	0.22	0.21
Phases 1 and 2 Operation	63	43	27	8.8
Phase 3 Total	**82**	**54**	**27**	**9.0**
Significance Threshold	54	54	82	54
Above Threshold?	**Yes**	No	No	No
Phase 4 Construction	19	10	0.24	0.23
Phases 1, 2, and 3 Operation	103	64	49	16
Phase 4 Total	**122**	**74**	**49**	**16**
Significance Threshold	54	54	82	54
Above Threshold?	**Yes**	**Yes**	No	No
Phase 5 Construction	8.2	7.5	0.15	0.15
Phases 1, 2, 3, and 4 Operation	144	81	74	23
Phase 5 Total	**152**	**89**	**75**	**23**
Significance Threshold	54	54	82	54
Above Threshold?	**Yes**	**Yes**	No	No

Table 4.G.9 Continued

	Maximum Annual Emissions (ton/year)			
	ROG	**NOx**	**PM_{10}**	**$PM_{2.5}$**
Phases 1 and 2 Construction	**4.7**	**1.8**	**0.03**	**0.03**
Significance Threshold	10	10	15	10
Above Threshold?	No	No	No	No
Phase 2 Construction (Post-Phase 1)	5.0	5.2	0.24	0.23
Phase 1 Operation	1.7	1.0	0.48	0.17
Phase 2 Total	**6.7**	**6.2**	**0.72**	**0.40**
Significance Threshold	10	10	15	10
Above Threshold?	No	No	No	No
Phase 3 Construction	4.8	1.5	0.03	0.03
Phases 1 and 2 Operation	11	7.9	5.0	1.6
Phase 3 Total	**16**	**9.4**	**5.0**	**1.6**
Significance Threshold	10	10	15	10
Above Threshold?	**Yes**	No	No	No
Phase 4 Construction	5.0	1.5	0.04	0.03
Phases 1, 2, and 3 Operation	19	12	9.0	2.9
Phase 4 Total	**24**	**14**	**9.0**	**2.9**
Significance Threshold	10	10	15	10
Above Threshold?	**Yes**	**Yes**	No	No
Phase 5 Construction	2.1	1.1	0.02	0.02
Phases 1, 2, 3, and 4 Operation	26	15	14	4.2
Phase 5 Total	**28**	**16**	**14**	**4.2**
Significance Threshold	10	10	15	10
Above Threshold?	**Yes**	**Yes**	No	No

Notes: Bolded numerical values are totals during construction of a given phase with the addition of operational emissions from previous phases. If the total exceeds a threshold then the exceedance is identified by a bolded "Yes" response.

For each construction phase, annual emissions are divided over the number of construction days for the given phase, to determine the average daily emissions. Phases 1 and 2 would be constructed concurrently. Phase durations as estimated by the applicant were 780 days for all phases except Phase 1 which would be less intensive. Phase 1 duration estimated using CalEEMod default values as these data were not available

No mitigation is required until Phase 3 of construction. Consequently construction emissions for Phase 1 and Phase 2 are unmitigated.

Source: ESA, 2016

Impact AQ-2: At project build-out, the Proposed Project would result in emissions of criteria air pollutants at levels that would violate an air quality standard, contribute to an existing or projected air quality violation, and result in a cumulatively considerable net increase in criteria air pollutants. (*Significant and Unavoidable with Mitigation*)

Operational emissions at project build-out were quantified consistent with the methodology identified above for Impact AQ-1 for build-out year 2030. The operational emissions at project build-out for the Maximum Residential and Maximum Commercial Scenarios are discussed below.

Maximum Residential Scenario

The daily and annual increase in emissions associated with operation of the Maximum Residential Scenario in the assumed build-out year of 2030 is summarized in Table 4.G.10: Unmitigated Average Daily and Maximum Annual Operational Emissions at Project Build-out for the Maximum Residential Scenario, for ROG (precursor of ozone), NOx (precursor of ozone), PM_{10}, and $PM_{2.5}$. Project-related emissions under the Maximum Residential Scenario would exceed BAAQMD thresholds of significance for ROG, NOx, and PM_{10}. ROG emissions would be primarily from mobile emissions (54 percent) and area sources (43 percent). The area source emission component is primarily attributable to consumer product use of building occupants (77 percent) and maintenance application of paints and other architectural coatings (18 percent). NOx emissions would be primarily from mobile sources and energy demand, while PM_{10} emissions are almost entirely mobile source related.

Therefore, the Proposed Project would have a significant impact on regional emissions related to operational emissions of ozone precursors and PM_{10}. Significant emissions of ozone precursors (ROG and NOx) and PM_{10} from operation would have the same potential health effects as discussed in Impact AQ-1 above.

Maximum Commercial Scenario

The daily and annual increase in emissions associated with operation of the Maximum Commercial Scenario is shown in Table 4.G.11: Unmitigated Average Daily and Maximum Annual Operational Emissions at Project Build-out for the Maximum Commercial Scenario, for ROG, NOx, PM_{10}, and $PM_{2.5}$. Project-related emissions under the Maximum Commercial Scenario would exceed BAAQMD thresholds of significance for ROG, NOx, and PM_{10}. Therefore, the Proposed Project would also have a significant impact on regional emissions related to ozone precursors and PM_{10} under this scenario. Significant emissions of ozone precursors (ROG and NOx) and PM_{10} from operation would have the same potential health effects as discussed in Impact AQ-1 above.

Table 4.G.10: Unmitigated Average Daily and Maximum Annual Operational Emissions at Project Build-out for the Maximum Residential Scenario

	Average Daily Emissions (lb/day)			
	ROG	**NOx**	**PM_{10}**	**$PM_{2.5}$**
Area Source	81.6	1.4	0.7	0.7
Energy	2.6	23.0	1.8	1.8
Mobile	89.9	67.8	86.6	24.7
Stationary Source (generator)	1.5	18.7	1.3	1.3
Total	**176**	**111**	**90**	**29**
Significance Threshold	54	54	82	54
Above Threshold?	**Yes**	**Yes**	**Yes**	No
	Maximum Annual Emissions (ton/year)			
Area Source	14.9	0.26	0.13	0.13
Energy	0.48	4.2	0.33	0.33
Mobile	16.4	12.4	15.8	4.5
Stationary Source (generator)	0.28	3.4	0.24	0.24
Total	**32**	**20**	**17**	**5.2**
Significance Threshold	10	10	15	10
Above Threshold?	**Yes**	**Yes**	**Yes**	No

Note: Bolded numerical values are totals during construction of a given phase with the addition of operational emissions from previous phases. If the total exceeds a threshold, then the exceedance is identified by a bolded "Yes" response.

Source: ESA, 2016

Table 4.G.11: Unmitigated Average Daily and Maximum Annual Operational Emissions at Project Build-out for the Maximum Commercial Scenario

	Average Daily Emissions (lb/day)			
	ROG	**NOx**	**PM_{10}**	**$PM_{2.5}$**
Area Source	78.4	0.8	0.4	0.4
Energy	2.4	21.4	1.6	1.6
Mobile	98.1	74.5	96.4	28.5
Stationary Source (generator)	1.5	18.7	0.2	0.02
Total	**180**	**115**	**99**	**31**
Significance Threshold	54	54	82	54
Above Threshold?	**Yes**	**Yes**	**Yes**	No
	Maximum Annual Emissions (ton/year)			
Area Source	14.3	0.14	0.07	0.07
Energy	0.44	3.9	0.30	0.30
Mobile	17.9	13.6	17.6	5.2
Stationary Source (generator)	0.28	3.4	0.24	0.24
Total	**32**	**21**	**18**	**5.8**
Significance Threshold	10	10	15	10
Above Threshold?	**Yes**	**Yes**	**Yes**	No

Note: Bolded numerical values are totals during construction of a given phase with the addition of operational emissions from previous phases. If the total exceeds a threshold, then the exceedance is identified by a bolded "Yes" response.

Source: ESA, 2016

Mitigation Measures M-AQ-1b though M-AQ1g would reduce operational emissions associated with both the Maximum Residential and Maximum Commercial Scenarios. As indicated in Table 4.G.12: Mitigated Average Daily and Maximum Annual Operational Emissions at Project Build-out for the Maximum Residential Scenario, and Table 4.G.13: Mitigated Average Daily and Maximum Annual Operational Emissions at Project Build-out for the Maximum Commercial Scenario, even with implementation of Mitigation Measures M-AQ-1b through M-AQ-1g, criteria pollutant emissions from operation of the Maximum Residential Scenario or the Maximum Commercial Scenario would remain significant. Consequently, implementation of Mitigation Measure M-AQ-1h: Offsets of Operational Emissions would be required to reduce emission to the extent feasible.

Table 4.G.12: Mitigated Average Daily and Maximum Annual Operational Emissions at Project Build-out for the Maximum Residential Scenario

	Average Daily Emissions (lb/day)			
	ROG	**NOx**	**PM_{10}**	**$PM_{2.5}$**
Area Source	75.1	1.4	0.7	0.7
Energy	2.6	23.0	1.8	1.8
Mobile	76.2	57.5	74.5	21.9
Stationary Source (generator)	0.2	2.0	0.02	0.02
Total	**154**	**84**	**77**	**22**
Significance Threshold	**54**	**54**	**82**	**54**
Above Threshold?	**Yes**	**Yes**	No	No
	Maximum Annual Emissions (ton/year)			
Area Source	13.7	0.26	0.13	0.13
Energy	0.48	4.2	0.33	0.33
Mobile	13.9	10.5	13.6	4.0
Stationary Source (generator)	0.03	0.4	<0.01	<0.01
Total	**28**	**15**	**14**	**4.5**
Significance Threshold	**10**	**10**	**15**	**10**
Above Threshold?	**Yes**	**Yes**	No	No

Source: ESA, 2016

Table 4.G.13: Mitigated Average Daily and Maximum Annual Operational Emissions at Project Build-out for the Maximum Commercial Scenario

	Average Daily Emissions (lb/day)			
	ROG	**NOx**	**PM_{10}**	**$PM_{2.5}$**
Area Source	72.3	0.8	0.4	0.4
Energy	2.4	21.4	1.6	1.6
Mobile	82.2	62.5	81.1	24.1
Stationary Source (generator)	0.2	2.0	<0.01	<0.01
Total	**157**	**87**	**84**	**26**
Significance Threshold	**54**	**54**	**82**	**54**
Above Threshold?	**Yes**	**Yes**	**Yes**	**No**
	Maximum Annual Emissions (ton/year)			
Area Source	13.2	0.14	0.07	0.07
Energy	0.44	3.9	0.30	0.30
Mobile	15.0	11.4	14.8	4.4
Stationary Source (generator)	0.03	0.4	<0.01	<0.01
Total	**29**	**16**	**15**	**5**
Significance Threshold	**10**	**10**	**15**	**10**
Above Threshold?	**Yes**	**Yes**	**Yes**	No

Source: ESA, 2016

As discussed in Impact AQ-1, if Mitigation Measure M-AQ-1h is implemented via a directly funded or implemented offset project, it could have the potential to reduce the impact to a less than significant level but only if the timing of the offsets could be documented prior to the occupancy of Phase 3 and ensured for the life of the project. Therefore, the residual impact of project emissions during operation at build out is conservatively considered significant and unavoidable with mitigation, acknowledging the assumption that the project sponsor would implement Mitigation Measures M-AQ-1a though M-AQ-1h (Emission Offsets).

Impact AQ-3: Construction and operation of the Proposed Project would generate toxic air contaminants, including DPM, which would expose sensitive receptors to substantial pollutant concentrations. (*Less than Significant with Mitigation*)

Site preparation activities, such as demolition, excavation, grading, foundation construction, and other ground-disturbing construction activity, would affect localized air quality during the construction phases of the Proposed Project. Short-term emissions from construction equipment during these site preparation activities would include directly emitted PM ($PM_{2.5}$ and PM_{10}) and TACs such as DPM. Additionally, the long-term emissions from the project's mobile and

stationary sources, as described in Impact AQ-1, would include PM ($PM_{2.5}$) and TACs such as DPM and some compounds or variations of ROGs. The generation of these short- and long-term emissions could expose sensitive receptors to substantial pollutant concentrations of TACs, resulting in a localized health risk. Therefore, an HRA was conducted for the Proposed Project.

Neither the proposed receptors nor the nearest off-site receptors are located within an area that currently meets the APEZ criteria (100 in one million excess cancer risk or a $PM_{2.5}$ concentration of 10 $\mu g/m^3$). For receptors not located in areas that meet the APEZ criteria, an HRA is conducted to determine whether the Proposed Project would, in combination with other exiting sources in the area, result in a given off-site or on-site receptor meeting the APEZ criteria. If a receptor point meets the APEZ criteria, that otherwise would not without the project, a project would result in a significant health risk impact if the project would contribute to $PM_{2.5}$ concentrations above 0.3 $\mu g/m^3$ or result in an excess cancer risk greater than 10.0 per one million persons exposed.

Methodology

An HRA is used to determine if a particular chemical poses a significant risk to human health and, if so, under what circumstances. The HRA prepared for this project focuses on $PM_{2.5}$ and TACs because these, more so than other types of air pollutants, pose significant health impacts at the local level[63]. The methodologies for the TAC analysis were based on the most recent BAAQMD Recommended Methods for Screening and Modeling Local Risks and Hazards,[64] which recommends the use of the EPA's AERMOD model.

The health risk estimated DPM, speciated[65] total organic gas (TOG), and $PM_{2.5}$ concentrations based on data generated by the CalEEMod model for construction and operational project vehicle traffic. Operational contributions from emergency standby generators were based on calculations using emission rates published by EPA25F.[66] DPM, TOG, and $PM_{2.5}$ emissions rates were used as inputs into AERMOD to predict worst case DPM, TOG, and $PM_{2.5}$ concentrations, respectively. AERMOD is also the model that was used by BAAQMD in the citywide modeling discussed in the Setting section. DPM and speciated TOG concentrations were then used to determine excess lifetime cancer risk based on the health risk assessment methodology published

[63] Bay Area Air Quality Management District, *CEQA Air Quality Guidelines*, May 2011, p. 4-21.

[64] BAAQMD, *Recommended Methods for Screening and Modeling Local Risks and Hazards,* May 2012. Available online at http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/BAAQMD%20Modeling%20Approach.ashx. Accessed January 18, 2016.

[65] Only certain compounds, or species, of total organic gases are also TACs.

[66] U.S. EPA AP-42, Compilation of Air Pollutant Emission Factors. 3.3 Gasoline and Diesel Industrial Engines & 3.4 Large Stationary Diesel and All Stationary Dual-Fuel Engines, October 1996.

by the OEHHA in 2015. Construction activities were modeled as area sources, haul trips and operational trips as adjacent volume sources, and operational generators as point sources[67].

The DPM and $PM_{2.5}$ concentrations for each phase of construction due to construction activities and haul trips were modeled separately by year of construction, to account for emissions specific to construction activities occurring in specific time periods. Operational on-road traffic and emergency generator emissions were also modeled to determine pollutant concentrations at on- and off-site receptors. The excess cancer risk and $PM_{2.5}$ concentrations from all sources (ambient [for $PM_{2.5}$ only] plus project construction, operation, and traffic sources) as well as the excess cancer risk from the sum of all existing emissions sources for each receptor point was then determined.

Near-field air dispersion modeling of DPM from project sources was conducted using the EPA's AERMOD model (version 15181).[68] This model requires inputs such as source parameters, meteorological parameters, topography information, and receptor parameters. The exposure parameters were obtained using risk assessment guidelines from the California Environmental Protection Agency[69] and BAAQMD[70]. Exposure parameters include daily breathing rate, exposure time, exposure frequency, exposure duration, average time, and inhalation intake factors. Details of the AERMOD modeling inputs, toxics analysis, and exposure parameters are included in the AQTR.

Off-site child residents (living adjacent to the project site and not within any of the project's phases) were assumed to be present at one location during the entire construction period and were evaluated for both project scenarios. Off-site and on-site residents were assumed to be present at one location for 30 years, consistent with OEHHA guidance.

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[67] In dispersion modeling, a point source is a source emanated from a discrete point on the modeling grid. An area source is a two-dimensional emissions source that is represented by polygon vertices. A volume source is a three-dimensional emissions source that is represented by a location, release height, and initial lateral and vertical plume sizes.

[68] On November 9, 2005, the EPA promulgated final revisions to the Federal Guideline on Air Quality Models, in which it recommended that AERMOD be used for dispersion modeling evaluations of criteria air pollutant and toxic air pollutant emissions from typical industrial facilities. EPA Preferred/Recommended Models, *AERMOD Modeling System*, http://www.epa.gov/ttn/scram/dispersion_prefrec.htm#aermod.

[69] California Environmental Protection Agency, *The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessment, February 2015*. Available online at http://oehha.ca.gov/air/hot_spots/2015/2015GuidanceManual.pdf. Accessed January 18, 2016.

[70] BAAQMD, *Air Toxics NSR Program Health Risk Screening Analysis (HRSA) Guidelines*, January 2010. Available online at http://www.baaqmd.gov/~/media/Files/Engineering/Air%20Toxics%20Programs/hrsa_guidelines.ashx. Accessed January 18, 2016.

$PM_{2.5}$ concentrations are evaluated on an annual average basis. However, excess cancer risk is evaluated based on lifetime exposure to pollutant concentrations; therefore, the AQTR evaluated excess cancer risk as a result of exposure to both construction and operational emission together. Both the Maximum Commercial and Maximum Residential Scenarios were evaluated and the higher result for each receptor type was determined.

Excess Cancer Risk from Construction and Operation Emissions at Off-Site Receptors. The maximum estimated excess lifetime cancer risk from all project sources (assuming a receptor was born during construction and exposed to project-related emissions for 30 years) at off-site locations is presented in Table 4.G.14 for the Maximum Residential Scenario and Table 4.G.15 for the Maximum Commercial Scenario. As shown in the tables, unmitigated emissions plus existing background emissions would not result in a total excess cancer risk of 100 in one million at the most impacted receptor. This would be below the level for causing a new location to meet the APEZ excess cancer risk criteria, and thus would be a less-than-significant impact. The majority of project-generated excess cancer risk at the Maximum Exposed Individual Sensitive Receptor (MEISR) would be attributable to construction emissions.

Excess Cancer Risk from Construction and Operational Emissions at On-Site Receptors. Both the Maximum Residential Scenario and the Maximum Commercial Scenario would include development of residential units, which is considered a sensitive land use for purposes of air quality evaluation. The Proposed Project would result in construction-related TAC emissions that would affect the occupants of the first phases of the Proposed Project and diesel backup generators may also impact these future residents. The estimated excess cancer risk from the emissions of both scenarios at the on-site MEISR are presented in Table 4.G.16: Lifetime Cancer Risk and $PM_{2.5}$ Concentration Contributions at the Maximally Impacted On-Site Receptors. The project's emissions would combine with existing background concentrations and would exceed the APEZ excess cancer risk criteria of an excess cancer risk of 100 per one million persons exposed. Therefore, the impact with regard to increased cancer risk would be *significant* for on-site receptors for the Maximum Residential and Maximum Commercial Scenarios.

The mitigated condition assumed in the HRA included emission reductions quantified for Mitigation Measures M-AQ-1a: Construction Emissions Minimization, M-AQ-1b: Diesel Backup Generator Specifications, M-AQ-1c: Use Low- and Super-Compliant VOC Architectural Coatings in Maintaining Buildings through CC&Rs, and M-AQ-1f: Transportation Demand Management. As indicated in Tables 4.G.15 and 4.G.16, construction emissions contribute over 90 percent of the unmitigated project's health risk. Consequently, implementation of Mitigation Measure M-AQ-1a alone would be sufficient to reduce this impact to a less than significant level.

Table 4.G.14: Lifetime Cancer Risk and $PM_{2.5}$ Concentration Contributions of the Maximum Residential Scenario at Off-Site Receptors

Source	Lifetime Excess Cancer Risk (in one million)		$PM_{2.5}$ Concentration ($\mu g/m^3$)	
	Unmitigated	**Mitigated**	**Unmitigated**	**Mitigated**
Residential Receptor				
Background	44	44	8.4	8.4
Construction – Off-road Emissions	15	14	0.072	0.072
Construction – Vehicle Traffic	0.12	0.12	3.0E-04	3.0E-04
Operation – Emergency Generators	0.74	0.074	9.8E-04	9.8E-05
Operation – Vehicle Traffic	0.65	0.55	0.024	0.020
Cumulative Total	**60**	**58**	**8.5**	**8.5**
APEZ Criteria	100	100	10.0	10.0
Significant?	No	No	No	No
School Receptor – Construction				
Background	44	44	8.4	8.4
Construction – Off-road Emissions	4.8	3.4	0.072	0.072
Construction – Vehicle Traffic	0.07	0.069	3.0E-04	3.0E-04
Cumulative Construction Total	**49**	**47**	**8.5**	**8.5**
APEZ Criteria	100	100	10.0	10.0
Significant?	No	No	No	No
School Receptor – Operation				
Background	44	44	8.4	8.4
Operation – Emergency Generators	0.14	0.014	9.8E-04	9.8E-05
Operation – Vehicle Traffic	0.12	0.11	0.024	0.020
Cumulative Operational Total	44	**44**	**8.4**	**8.4**
Cumulative Total (construction and operation)	49	**47**	**8.5**	**8.5**
APEZ Criteria	100	100	10.0	10.0
Significant?	No	No	No	No

Source: Ramboll ENVIRON, 2016

Table 4.G.15: Lifetime Cancer Risk and $PM_{2.5}$ Concentration Contributions of the Maximum Commercial Scenario at Off-Site Receptors

Source	Lifetime Excess Cancer Risk (in one million)		$PM_{2.5}$ Concentration ($\mu g/m^3$)	
	Unmitigated	**Mitigated**	**Unmitigated**	**Mitigated**
Residential Receptor				
Background	51	51	8.4	8.4
Construction – Off-road Emissions	16	14	0.073	0.073
Construction – Vehicle Traffic	0.47	0.47	3.0E-04	3.0E-04
Operation – Emergency Generators	0.73	0.073	9.8E-04	9.8E-05
Operation – Vehicle Traffic	0.44	0.37	0.024	0.020
Cumulative Total	**68**	**66**	**8.5**	**8.5**
APEZ	100	100	10.0	10.0
Significant?	No	No	No	No
School Receptor – Construction				
Background	44	44	8.4	8.4
Construction – Off-road Emissions	4.7	3.5	0.073	0.073
Construction – Vehicle Traffic	0.07	0.07	3.0E-04	3.0E-04
Cumulative Total	**49**	**47**	**8.5**	**8.5**
APEZ Criteria	100	100	10.0	10.0
Significant?	No	No	No	No
School Receptor – Operation				
Background	44	44	8.4	8.4
Operation – Emergency Generators	0.14	0.014	9.8E-04	9.8E-05
Operation – Vehicle Traffic	0.123	0.104	0.024	0.020
Cumulative Total	**44**	**44**	**8.5**	**8.5**
Cumulative Total (construction and operation)	49	**48**	**8.5**	**8.5**
APEZ Criteria	100	100	10.0	10.0
Significant?	No	No	No	No

Source: Ramboll ENVIRON, 2016

Table 4.G.16: Lifetime Cancer Risk and $PM_{2.5}$ Concentration Contributions at the Maximally Impacted On-Site Receptors

Source	Lifetime Excess Cancer Risk (in one million)		$PM_{2.5}$ Concentration ($\mu g/m^3$)	
	Unmitigated	**Mitigated[a]**	**Unmitigated**	**Mitigated**
Maximum Residential Scenario				
Background	36	34	8.3	8.4
Construction – Off-road Emissions	81	20	0.24	0.058
Construction – Vehicle Traffic	0.30	0.17	1.1E-04	3.1E-04
Operation – Emergency Generators	2.9	0.13	0.0065	1.7E-04
Operation – Vehicle Traffic	0.19	0.31	0.0027	0.011
Total	**120**	**54**	**8.6**	**8.4**
City of SF Threshold (not in APEZ)	100	100	10.0	10.0
Significant?	**Yes**	No	No	No
Maximum Commercial Scenario				
Background	27	35	8.3	8.4
Construction – Off-road Emissions	78	51	0.24	0.15
Construction – Vehicle Traffic	0.043	0.20	1.0E-04	4.0E-04
Operation – Emergency Generators	4.9	0.11	0.0065	1.5E-04
Operation – Vehicle Traffic	0.073	0.38	0.0027	0.014
Total	**110**	**86**	**8.6**	**8.6**
City of SF Threshold (not in APEZ)	100	100	10.0	10.0
Significant?	**Yes**	No	No	No

Note:

[a] In some instances the mitigated value may be greater than the non-mitigated value. This can occur when application of mitigation changes the location of the maximally impacted receptor, thereby potentially resulting in a reported value for a given receptor that is different and potentially greater than that of the previous maximally impacted receptor under the non-mitigated condition.

Source: Ramboll ENVIRON, 2016

$PM_{2.5}$ Concentrations from Construction and Operation Emissions at Off-Site Receptors. The maximum estimated $PM_{2.5}$ concentrations from all project sources at off-site locations are presented in Table 4.G.14 for the Maximum Residential Scenario and in Table 4.G.15 for the Maximum Commercial Scenario. As shown in the tables, unmitigated emissions in combination with background concentrations would result in $PM_{2.5}$ concentrations of 8.5 $\mu g/m^3$ for both scenarios, which would be below the levels for causing a new location to meet the APEZ criteria of 10 $\mu g/m^3$. Therefore, this would be a less than significant impact.

$PM_{2.5}$ Concentrations from Construction and Operation Emissions at On-Site Receptors. The maximum estimated $PM_{2.5}$ concentrations from all project sources at on-site locations are presented in Table 4.G.16. As shown in the table, unmitigated emissions in combination with background concentrations would result in $PM_{2.5}$ concentrations of 8.6 $\mu g/m^3$ for both scenarios, which would be below the levels for causing a new location to meet the APEZ criteria of 10 $\mu g/m^3$. Therefore, this would be a less than significant impact.

In summary, the Proposed Project would result in significant health risk impact to on-site sensitive receptors under both the Maximum Residential and Maximum Commercial Scenarios. This impact would be reduced to less than significant with incorporation of Mitigation Measure M-AQ-1a.

Impact AQ-4: The Maximum Residential or Maximum Commercial Scenarios would conflict with implementation of the Bay Area 2010 Clean Air Plan. (*Less than Significant with Mitigation*)

The most recently adopted air quality plan for the SFBAAB is the 2010 Clean Air Plan. Although an updated Clean Air Plan is currently being prepared, it is still not finalized and subject to change based on pending public comments. The Clean Air Plan is a road map that demonstrates how the Bay Area will, in accordance with the requirements of the California Clean Air Act, implement all feasible measures to reduce ozone. It also provides a control strategy to reduce ozone, PM, air toxics, and GHGs. In determining consistency with the Clean Air Plan, this analysis considers whether the project would (1) support the primary goals of the Clean Air Plan, (2) include applicable control measures from the Clean Air Plan, and (3) avoid disrupting or hindering implementation of control measures identified in the Clean Air Plan.

The primary goals of the Clean Air Plan are to (1) reduce emissions and decrease concentrations of harmful pollutants, (2) safeguard the public health by reducing exposure to air pollutants that pose the greatest health risk, and (3) reduce GHG emissions. To meet the primary goals, the Clean Air Plan recommends specific control measures and actions. These control measures are grouped into various categories and include stationary- and area-source measures, mobile-source measures, transportation control measures, land-use measures, and energy and climate measures.

The Clean Air Plan recognizes that, to a great extent, community design[71] dictates individual travel modes and that a key long-term control strategy to reduce emissions of criteria pollutants, air toxics, and GHGs from motor vehicles is to channel future Bay Area growth into communities where goods and services are located nearby and people have a range of viable transportation options. To this end, the Clean Air Plan includes 55 control measures aimed at reducing air pollutants in the SFBAAB. Many of these measures address stationary sources and will be implemented by BAAQMD using its permit authority and therefore are not suited to implementation through local planning efforts or project approval actions. The applicable 25 CAP measures are identified in Table 4.G.17: Control Strategies of the 2010 Clean Air Plan. This table identifies each control strategy and correlates it to specific elements of each of the two project scenarios or explains why the strategy does or does not apply to the project site development. As shown in Table 4.G.17, without certain mitigation measures incorporated into the project, the project would not include applicable control measures from the 2010 Clean Air Plan and this impact would be *significant*. However, with incorporation of mitigation measures identified in Table 4.G.17, the Proposed Project would include applicable control strategies contained in the 2010 Clean Air Plan for the SFBAAB.

The Proposed Project's impact with respect to GHGs is discussed in Section 4.H, Greenhouse Gas Emissions. As stated there, the Proposed Project would be substantially compliant with the City's Greenhouse Gas Reduction Strategy and thus would not result in any significant impacts associated with an increase in GHGs or conflict with measures adopted for the purpose of reducing such emissions.

In addition to the above measures, transportation control measures that are identified in the Clean Air Plan are implemented by the *San Francisco General Plan* and the Planning Code, for example, through the City's Transit First Policy, the bicycle parking requirements, and transit impact development fees. Additionally, the project would incorporate a TDM program identified as Mitigation Measure M-AQ-1f. As indicated in Table 4.G.17, implementation of the TDM Program under Mitigation Measure M-AQ-1f and the additional Mitigation Measure M-AQ-1g (Additional Mobile Source Control Measures [preferential parking and/or charging stations for

[71] For people who live (and/or work) in low-density, car-oriented developments, the motor vehicle is often the only viable transportation option. In such situations, even the most robust strategy to promote alternative modes of travel can have, at best, only a very modest effect. In contrast, compact communities with a mixture of land uses make it much easier to walk, cycle, or take transit for at least some daily trips.

Table 4.G.17: Control Strategies of the 2010 Clean Air Plan

2010 Clean Air Plan Control Strategy	Elements of Proposed Project Site Development Consistent with the Strategy or Explanation of Non-Applicability
Transportation Control Measures	
TCM A: Improve Transit Services	As stated in Mitigation Measure M-TR-4: Monitor and increase capacity on the 48 Quintara/24th Street bus routes as needed, the project sponsors would be required by the Planning Department to perform and submit trip generation calculations or monitoring surveys to demonstrate if and when the Proposed Project will cause capacity on the 48 Quintara/24th Street Muni route to exceed 85 percent and if so shall provide capital costs for increased capacity on the route. Although the San Francisco Municipal Transportation Agency has not formally agreed to operate increased service on this route, this measure provides for transit improvement should the San Franciso Municipal Transportation Agency acknowledge that it is warranted.
TCM B: Improve System Efficiency	Not Applicable: This measure addresses infrastructure improvements to increase operational efficiencies on freeways and transit service (such as common fare payment systems) that are geared toward regional transit agencies and Caltrans, and not by local government or through land use development projects.
TCM C: Encourage Sustainable Travel Behavior (i.e., voluntary employer-based trip reduction program)	Mitigation Measure M-AQ-1f would require the project sponsors to establish a TDM program. Developers may choose from a menu of TDM strategies including subsidies for site users who use transit or other alternative modes of transportation.
TCM D: Support Focused Growth (Bicycle and Pedestrian friendliness)	The Proposed Project includes bike lanes and bike-parking facilities to promote bicycling in and around the project site. Under the provisions of the SUD, bike amenities would be constructed on the project site to meet or exceed Planning Code requirements. Improvements proposed by the Proposed Project include construction of Class 2 bicycle facilities and Class 3 bicycle facilities (shared-lane markings and signage) on 20th Street, 22nd Street, and Maryland Street, and a Class 1 separated bicycle and pedestrian facility would be provided to extend the Bay Trail and Blue Greenway the length of the project site along the shoreline.
TCM E: Implement Pricing Strategies	As discussed in the project description, all residential parking would be unbundled, which means parking would be an optional, additional cost to the price of renting or purchasing a dwelling unit. Additionally, parking strategies would be included as part of the Proposed Project's TDM program.
Mobile Source Control Measures	
MSM A-1: Promote Clean Fuel Efficient Vehicles	Not part of Proposed Project site development. Mitigation Measure M-AQ-1g would increase the requirement for the project sponsors to provide preferential parking for alternative-fueled vehicles above that required by the Planning Code.

Table 4.G.17 Continued

2010 Clean Air Plan Control Strategy	Elements of Proposed Project Site Development Consistent with the Strategy or Explanation of Non-Applicability
MSM A-2: Zero Emission Vehicles	Not part of Proposed Project site development. Mitigation Measure M-AQ-1g requires the project sponsor to provide neighborhood electric vehicle programs to reduce the need to have a car or second car.
MSM A-3: Green Fleets	Development of the project site generally would be retail, commercial, or residential in nature and unlikely to accommodate a land use requiring a fleet of vehicles. However, it is possible that the project could implement replacement or repair of high-emitting vehicle fleet as part of Mitigation Measure M-AQ-1h (Emissions Offsets).
MSM A-4: Replacement or Repair of High-Emitting Vehicles	The project is a development project whose vehicle emissions would be generated by residents and commercial tenants who own their own vehicles. However, it is possible that the project could implement replacement or repair of high-emitting vehicles as part of Mitigation Measure M-AQ-1h (Emissions Offsets).
MSM B-1: Fleet Modernization for Medium and Heavy-Duty Trucks	The project is a development project whose vehicle emissions would be generated by residents and commercial tenants who own their own vehicles. However, it is possible that the project could implement replacement or repair of high-emitting vehicles as part of Mitigation Measure M-AQ-1h (Emissions Offsets).
MSM B-2: Low NOx Retrofits in Heavy-Duty Trucks	Construction of the Proposed Project would be subject to Mitigation Measure M-AQ-1a, which would require low NOx-emitting construction vehicles. Regarding operational emissions, the project is a development project whose vehicle emissions would be generated by residents and commercial tenants who own their own vehicles. However, it is possible that the project could implement replacement or repair of high-emitting vehicles as part of Mitigation Measure M-AQ-1h (Emissions Offsets).
MSM B-3: Efficient Drive Trains	Not Applicable: This strategy addresses development and demonstration programs in partnership with the CARB and the California Energy Commission.
MSM C-1: Construction and Farming Equipment	Construction of the Proposed Project would be subject to Mitigation Measure M-AQ-1a, which would require Tier 4, low-emissions construction vehicles. With regards to operational emissions, the project is a development project whose vehicle emissions would be generated by residents and commercial tenants who own their own vehicles. However, it is possible that the project could implement replacement or repair of high-emitting vehicles as part of Mitigation Measure M-AQ-1h (Emissions Offsets).
MSM C-2: Lawn & Garden Equipment	This strategy addresses voluntary exchange programs implemented by BAAQMD. This measure could be one of the measures implemented by previously identified Mitigation Measure M-AQ-1h (Emissions Offsets).

Table 4.G.17 Continued

2010 Clean Air Plan Control Strategy	Elements of Proposed Project Site Development Consistent with the Strategy or Explanation of Non-Applicability
MSM C-3: Recreational Vessels	This strategy addresses voluntary exchange programs implemented by BAAQMD. This measure could be one of the measures implemented by previously identified Mitigation Measure M-AQ-1h (Emissions Offsets).
Land Use and Local Impact Measures	
LUM 1: Goods Movement	Development of the project site generally would be retail, commercial or residential in nature and would not include warehousing and industrial uses that would involve substantial goods transport.
LUM 2: Indirect Source Review Rule	Not Applicable: This strategy addresses implementation of an indirect source rule by BAAQMD.
LUM 3: Updated CEQA Guidelines	Not Applicable: This strategy addresses updating of the *CEQA Guidelines* by BAAQMD. These guidelines were most recently updated in May 2012, and were one of many tools used in the assessment of air quality impacts.
LUM 4: Land Use Guidance	Not Applicable: This strategy addresses updating land use planning documents such as the proposed development scenarios and demonstrating consistency with air quality protection guidance such as the BAAQMD *CEQA Guidelines* that are applied in this analysis.
LUM 5: Reduce Health Risk in Impacted Communities	The Proposed Project site is identified in Figure 3-2 of the CAP as an "impacted community." This EIR evaluates the health risk effects of the project in combination with existing background health risks in Impact AQ-3 and determines that with incorporation of Mitigation Measure M-AQ1a, the Proposed Project would not result in a significant health risk impact.
LUM 6: Enhanced Air Quality Monitoring	Not Applicable: This strategy addresses air quality monitoring that is under the purview of BAAQMD and/or the CARB.
Energy and Climate Measures	
ECM 1: Energy Efficiency	The Proposed Project would comply with San Francisco Green Building Requirements for energy efficiency in new buildings. Energy-efficient appliances and energy-efficient lighting would also be installed in the three rehabilitated historic buildings.
ECM 2: Renewable Energy	The Proposed Project is required to meet San Francisco Green Building Requirements for renewable energy. As discussed in Section 4.H Greenhous Gas Emissions, at least 15 percent of the roof area of all proposed buildings (excluding existing Buildings 2, 12, and 21) would include roof-mounted or building-integrated solar photovoltaic (PV) systems and/or roof-mounted solar thermal hot water systems.

Table 4.G.17 Continued

2010 Clean Air Plan Control Strategy	Elements of Proposed Project Site Development Consistent with the Strategy or Explanation of Non-Applicability
ECM 3: Urban Heat Island Mitigation	The Proposed Project development includes provision of a substantial amount of open space. This open space, as currently proposed, along with the landscaping requirements that would be imposed for site-specific development projects within the project site would implement measure ECM-3.
ECM 4: Shade Tree Planting	No street trees would be removed, and new street trees would be planted along designated street segments, for a total of approximately 152 street trees. Street trees would be planted in accordance with Public Works Code Section 806(d), except for areas around the Historic Core, where Federal historic standards would be applied.

Source: ESA, 2016

fuel-efficient vehicles and a neighborhood electric vehicle program]) would ensure the project includes relevant transportation control measures specified in the Clean Air Plan. Therefore, the Proposed Project would include applicable control measures identified in the Clean Air Plan and would support the primary goals of the Clean Air Plan.

Examples of a project that could cause the disruption or delay of Clean Air Plan control measures are projects that would preclude the extension of a transit line or bike path, or projects that propose excessive parking beyond City parking requirements. The Proposed Project site is a dense, walkable urban area near a concentration of regional and local transit service which include a Muni light rail stop at Third and 20th streets, 500 feet from the project site, and a Caltrain stop at 22nd Street, less than 0.5 mile from the project site. The Proposed Project site is designated as a Priority Development Area pursuant to the *Plan Pay Area.* This designation applies to new development areas that would support the day-to-day needs of residents and workers in a pedestrian-friendly environment served by transit. The Proposed Project includes bike lanes, bike-safety-oriented street design, and bike-parking facilities to promote bicycling in and around the project site.

The Proposed Project would not preclude the extension of a transit line or a bike path or any other transit improvement and, thus, would not disrupt or hinder implementation of control measures identified in the Clean Air Plan.

The City's Planning Code does not have parking minimum or maximum requirements for the existing Heavy Industrial zoning designation. However, the Pier 70 SUD would establish parking maximums of no more than 0.75 parking space per residential dwelling unit and no more than one parking space per 1,000 square feet of gross floor area for the office, commercial, retail, arts, or light industrial uses resulting in a maximum of over 4,000 spaces for both scenarios. Under the

Maximum Residential Scenario, about 3,370 off-street parking spaces and 285 on-street parking spaces would be allowed. Under the Maximum Commercial Scenario, about 3,496 off-street and 285 on-street parking spaces would be allowed. Consequently, the Proposed Project does not propose excessive parking beyond City parking requirements.

For the reasons described above, the Proposed Project would not interfere with implementation of the Clean Air Plan, and because the Proposed Project would be consistent with the applicable air quality plan that demonstrates how the region will improve ambient air quality and achieve the State and Federal ambient air quality standards, this impact would be less than significant.

Impact AQ-5: The Maximum Residential or Maximum Commercial Scenarios would not create objectionable odors that would affect a substantial number of people. (*Less than Significant*)

During construction, the various diesel-powered vehicles and equipment in use on site would create localized odors. These odors would be temporary and depend on specific construction activities occurring at certain times and are not likely to be noticeable for extended periods of time beyond the project site. Therefore, the potential for diesel odor impacts is considered less than significant. Existing uses on the project site are entirely for storage and auto space and are not an existing odor source.

Although there may be some potential for small-scale, localized odor issues to emerge around project sources such as solid waste collection, food preparation, etc., substantial odor sources and consequent effects on on-site and off-site sensitive receptors would be unlikely. BAAQMD Regulation 7 places general limitations on odorous substances and specific emission limitations on certain odorous compounds and applies to restaurants that employ more than five persons. Therefore, odor impacts would be less than significant.

CUMULATIVE IMPACTS

This section discusses the cumulative impacts to air quality that could result from the Proposed Project in conjunction with past, present, and reasonably foreseeable future projects.

Impact C-AQ-1: The Maximum Residential or Maximum Commercial Scenarios, in combination with past, present, and reasonably foreseeable future development in the project area, would contribute to cumulative regional air quality impacts. (*Significant and Unavoidable with Mitigation*)

The contribution of a project's individual air emissions to regional air quality impacts is, by its nature, a cumulative effect. Emissions from past, present, and future projects in the region also have or will contribute to adverse regional air quality impacts on a cumulative basis. No single project by itself would be sufficient in size to result in non-attainment of ambient air quality

standards. Instead, a project's individual emissions contribute to existing cumulative air quality conditions.[72] As described above, the project-level thresholds for criteria air pollutants are based on levels by which new sources are not anticipated to contribute to an air quality violation or result in a considerable net increase in criteria air pollutants. Therefore, because the Proposed Project's emissions exceed the project-level thresholds, the project would result in a considerable contribution to cumulative regional air quality impacts. As discussed above, implementation of Mitigation Measures M-AQ-1a through M-AQ-1h would reduce this impact, however, not to a less-than-significant level. Therefore, this impact would be significant and unavoidable with mitigation.

Impact C-AQ-2: The Maximum Residential or Maximum Commercial Scenarios, in combination with past, present, and reasonably foreseeable future development in the project area, would contribute to cumulative health risk impacts on sensitive receptors. (*Less than Significant with Mitigation*)

The HRA takes into account the cumulative contribution of existing localized health risks to sensitive receptors from sources included in the Citywide modeling plus the Proposed Project's sources. There are, however, other future projects, whose emissions have not been incorporated into the existing citywide health risk modeling because analysis with respect to CEQA for these future project either has not yet been prepared or is pending.

The BAAQMD has identified a distance of 1,000 feet as an appropriate zone of influence for assessing health risk impacts[73] and specifies that cumulative sources represent the combined total risk values of each individual source within the 1,000-foot evaluation zone.

Cumulative projects that are within 1,000 feet of the project site are identified in Figure 4.A.1: Location of Baseline and Foreseeable Future Projects, in Section 4.A, Introduction to Chapter 4, p. 4.A.7. There are 16 cumulative projects within this zone of influence, two of which are already completed and/or occupied. Another one of these cumulative projects is for the renewal of the lease for BAE Systems whose operations were already considered in the HRA analysis. The remaining projects are either residential, most of which have a ground floor retail or commercial component, or the proposed development of Crane Cove Park.

Citywide modeling of future health risks under 2040 conditions has been conducted by the City. This modeling includes transportation emissions for year 2040 and was based on growth projections that would have reasonably accounted for the traffic emissions from projects listed in Section 4.A Cumulative. Background (without project) cancer risk and $PM_{2.5}$ concentrations in

[72] BAAQMD, *CEQA Air Quality Guidelines*, May 2011, p. 2-1.
[73] BAAQMD, *CEQA Air Quality Guidelines*, May 2011, p. 5-2.

2040 are expected to decrease due to improved vehicle fleets and the electrification of Caltrain. Additionally, any backup diesel generators or other stationary sources that may be proposed by cumulative projects would need to meet BAAQMD permit requirements; therefore, emissions from these sources would be limited.

Citywide modeling for year 2040 does not include construction emissions because these are variable and difficult to predict. Cumulative year 2040 conditions without the project show lower background risks than the existing baseline cancer risks and consequently, addition of the project's risks cancer risk to 2040 conditions would similarly not result in new locations meeting the APEZ criteria that otherwise would not without the project with mitigation. Therefore, the project plus cumulative development projects and background risks in 2040 would not result in significant health risk impacts and the analysis in Impact AQ-3 presents a worst-case cumulative health risk analysis.

The Proposed Project would be required to implement Mitigation Measure M-AQ-1a, Construction Emission Minimization, which could reduce construction-period emissions. Additionally, Mitigation Measure M-AQ-1b, Diesel Backup Generator Specifications, would limit diesel generator emissions. Implementation of these mitigation measures would reduce the project's contribution to cumulative air quality impacts to a less-than-significant level.

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