4.2 Air Quality

This section evaluates the potential impacts of the Project on regional and local air quality. Development of this chapter was based on a review of existing documentation of air quality conditions in the region, air quality regulations from the U.S. Environmental Protection Agency (EPA), the California Air Resources Board (CARB), the Bay Area Air Quality Management District (BAAQMD), and information related to the Project Description.

4.2.1 Environmental Setting

Air quality is a function of both the rate and location of pollutant emissions under the influence of meteorological conditions and topographic features that influence pollutant movement and dispersal. Atmospheric conditions such as wind speed, wind direction, atmospheric stability, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants, and consequently affect air quality.

The Project is located in Walnut Creek (Contra Costa County), which lies within the San Francisco Bay Area Air Basin. The Bay Area Air Basin encompasses the nine-county region including all of Alameda, Contra Costa, Santa Clara, San Francisco, San Mateo, San Francisco, Marin and Napa counties, and the southern portions of Solano and Sonoma counties. The climate of the Bay Area is determined largely by a high-pressure system that is almost always present over the eastern Pacific Ocean off the West Coast of North America. High-pressure systems are characterized by an upper layer of dry air that warms as it descends, restricting the mobility of cooler marine-influenced air near the ground surface, and resulting in the formation of subsidence inversions. In winter, the Pacific high-pressure system shifts southward, allowing storms to pass through the region. During summer and fall, emissions generated within the Bay Area can combine with abundant sunshine under the restraining influences of topography and subsidence inversions to create conditions that are conducive to the formation of photochemical pollutants, such as ozone and secondary particulates, such as sulfates and nitrates.

Specifically, the Project is located within the Diablo and San Ramon Valley climatological subregion of the Bay Area Air Basin, which extends from the Carquinez Strait to the north to the Amador Valley at its southern end. Wind speeds in these valleys are generally low, at an average of five miles per hour. Temperatures in the subregion range from the summer averages in the 80s°F to winter averages in the high-30s to low-40s°F. Pollution potential is relatively high in these valleys. On winter evenings, light winds combine with surface inversions and terrain that restricts air flow can cause build up of air pollutant levels, and in the summer months, ozone and ozone precursors are often transported into the valleys from both the central Bay Area Air Basin and the Central Valley (BAAQMD, 2011a).

Existing Air Quality

The BAAQMD operates a regional monitoring network that measures the ambient concentrations of the six criteria air pollutants within the Bay Area. Existing levels of air quality in the Project Site

and surroundings can generally be inferred from ambient air quality measurements conducted by the BAAQMD at its nearby monitoring stations. The nearest station in Contra Costa County to the Project Site is the Treat Boulevard station in Concord, which measures criteria pollutants, including ozone, PM10, and PM2.5. **Table 4.2-1** shows a three-year summary of monitoring data for ozone and particulates at this station. The table also compares these measured concentrations with state and federal ambient air quality standards.

TABLE 4.2-1
AIR QUALITY DATA SUMMARY (2008-2010) – TREAT BOULEVARD STATION, CONCORD

	Monitoring Data by Year		
Pollutant	**2008**	**2009**	**2010**
Ozone			
Highest 1 Hour Average (ppm)[b]	**0.119**	**0.106**	**0.103**
Days over State Standard (0.09 ppm)[a]	3	2	2
Highest 8 Hour Average (ppm)[b]	**0.089**	**0.088**	**0.087**
Days over National Standard (0.075 ppm)[a]	6	2	1
Days over State Standard (0.07 ppm)[a]	8	5	4
Particulate Matter (PM10)			
Highest 24 Hour Average – State/National ($\mu g/m^3$)[b]	**50.5**/49.4	32.5/31.0	41.3/39.7
Estimated Days over National Standard (150 $\mu g/m^3$)[a,c]	0	0	0
Estimated Days over State Standard (50 $\mu g/m^3$)[a,c]	1	0	0
State Annual Average (State Standard 20 $\mu g/m^3$)[a,b]	17.5	14.7	13.7
Particulate Matter (PM2.5)			
Highest 24 Hour Average ($\mu g/m3$)[b] – National Measurement	**60.3**	**39.0**	**36.4**
Estimated Days over National Standard (35 $\mu g/m^3$)[a,c]	7.0	1.0	1.0
State Annual Average (12 $\mu g/m3$)[b]	9.5	8.4	7.1

[a] Generally, state standards and national standards are not to be exceeded more than once per year.
[b] ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter.
[c] PM10 and PM2.5 is not measured every day of the year. Number of estimated days over the standard is based on 365 days per year.

NA = Not Available. Values in **Bold** exceed the respective air quality standard.

SOURCE: California Air Resources Board (CARB), 2011. *Summaries of Air Quality Data*, 2008-2010; http://www.arb.ca.gov/adam/cgi-bin/db2www/polltrendsb.d2w/start

Criteria Air Pollutants

Ozone (O_3)

Short-term exposure to ozone can irritate the eyes and cause constriction of the airways. Besides causing shortness of breath, ozone can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema. Ozone is not emitted directly into the atmosphere, but is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG) and nitrogen oxides (NOx). ROG and NOx are known as precursor compounds for ozone. Significant ozone production generally requires ozone

precursors to be present in a stable atmosphere with strong sunlight for approximately three hours. Ozone is a regional air pollutant because it is not emitted directly by sources, but is formed downwind of sources of ROG and NOx under the influence of wind and sunlight. Ozone concentrations tend to be higher in the late spring, summer, and fall, when the long sunny days combine with regional subsidence inversions to create conditions conducive to the formation and accumulation of secondary photochemical compounds, like ozone. As indicated in Table 4.2-1, state and federal ozone standards have been exceeded several times in the county in each of the past three years.

Carbon Monoxide (CO)

Ambient CO concentrations normally are considered a local effect and typically correspond closely to the spatial and temporal distributions of vehicular traffic. Wind speed and atmospheric mixing also influence CO concentrations. Under inversion conditions, CO concentrations may be distributed more uniformly over an area that may extend some distance from vehicular sources. When inhaled at high concentrations, CO combines with hemoglobin in the blood and reduces the oxygen-carrying capacity of the blood. This results in reduced oxygen reaching the brain, heart, and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease, or anemia, as well as for fetuses.

CO concentrations have declined dramatically in California due to existing controls and programs, and most areas of the state, including the region encompassing the Project Site and surroundings have no problem meeting the CO state and federal standards. CO measurements and modeling were important in the early 1980s when CO levels were regularly exceeded throughout California. In more recent years, CO measurements and modeling have not been a priority in most California air districts due to the retirement of older polluting vehicles, fewer emissions from new vehicles, and improvements in fuels. The clear success in reducing CO levels is evident in the first paragraph of the executive summary of the CARB *2004 Revision to the California State Implementation Plan for Carbon Monoxide Updated Maintenance Plan for Ten Federal Planning Areas* (CARB, 2004), shown below:

> "The dramatic reduction in carbon monoxide (CO) levels across California is one of the biggest success stories in air pollution control. Air Resources Board (CARB or Board) requirements for cleaner vehicles, equipment and fuels have cut peak CO levels in half since 1980, despite growth. All areas of the state designated as non-attainment for the federal 8-hour CO standard in 1991 now attain the standard, including the Los Angeles urbanized area. Even the Calexico area of Imperial County on the congested Mexican border had no violations of the federal CO standard in 2003. Only the South Coast and Calexico continue to violate the more protective state 8-hour CO standard, with declining levels beginning to approach that standard."

Nitrogen Dioxide (NO_2)

NO_2 is a reddish brown gas that is a by-product of combustion processes. Automobiles and industrial operations are the main sources of NO_2. NO_2 may be visible as a coloring component of a brown cloud on high pollution days, especially in conjunction with high ozone levels. NO_2 is an air quality concern because it acts as a respiratory irritant and is a precursor of ozone. Nitrogen

dioxide is a major component of the group of gaseous nitrogen compounds commonly referred to as nitrogen oxides (NOx). Nitrogen oxides are produced by fuel combustion in motor vehicles, industrial stationary sources (such as industrial activities), ships, aircraft, and rail transit. Typically, nitrogen oxides emitted from fuel combustion are in the form of nitric oxide (NO) and nitrogen dioxide (NO_2). NO is often converted to NO_2 when it reacts with ozone or undergoes photochemical reactions in the atmosphere. Therefore, emissions of NO_2 from combustion sources are typically evaluated based on the amount of NOx emitted from the source. State and federal standards for NO_2 are being met throughout the Bay Area.

Sulfur Dioxide (SO_2)

SO_2 is a combustion product of sulfur or sulfur-containing fuels such as coal and diesel. SO_2 is also a precursor to the formation of atmospheric sulfate, particulate matter and contributes to potential atmospheric sulfuric acid formation that could precipitate downwind as acid rain. State and federal standards for SO_2 are being met throughout the Bay Area.

Particulate Matter (PM)

PM10 and PM2.5 consist of particulate matter that is 10 microns or less in diameter and 2.5 microns or less in diameter, respectively. (A micron is one-millionth of a meter). PM10 and PM2.5 represent fractions of particulate matter that can be inhaled into the air passages and the lungs and can cause adverse health effects. Some sources of particulate matter, such as wood burning in fireplaces, demolition, and construction activities, are more local in nature, while others, such as vehicular traffic, have a more regional effect. Very small particles of certain substances (e.g., sulfates and nitrates) can cause lung damage directly, or can contain adsorbed gases (e.g., chlorides or ammonium) that may be injurious to health. Particulates also can damage materials and reduce visibility. Large dust particles (diameter greater than 10 microns) settle out rapidly and are easily filtered by human breathing passages. This large dust is of more concern as a soiling nuisance rather than a health hazard. The remaining fraction, PM10 and PM2.5, are a health concern particularly at levels above the federal and state ambient air quality standards. PM2.5 (including diesel exhaust particles) is thought to have greater effects on health, because these particles are so small and thus, are able to penetrate to the deepest parts of the lungs. Scientific studies have suggested links between fine particulate matter and numerous health problems including asthma, bronchitis, acute and chronic respiratory symptoms such as shortness of breath and painful breathing. Recent studies have shown an association between morbidity and mortality and daily concentrations of particulate matter in the air. Children are more susceptible to the health risks of PM10 and PM2.5 because their immune and respiratory systems are still developing.

Mortality studies since the 1990s have shown a statistically significant direct association between mortality (premature deaths) and daily concentrations of particulate matter in the air. Despite important gaps in scientific knowledge and continued reasons for some skepticism, a comprehensive evaluation of the research findings provides persuasive evidence that exposure to fine particulate air pollution has adverse effects on cardiopulmonary health (Dockery and Pope, 2006). As indicated in Table 4.2-1, state and federal PM10 and PM2.5 standards have been exceeded several times in the county in each of the past three years.

Lead

Ambient lead concentrations meet both the federal and state standards in the Project Site and surroundings. Lead has a range of adverse neurotoxin health effects, and was formerly released into the atmosphere primarily via leaded gasoline products. The phase-out of leaded gasoline in California resulted in decreasing levels of atmospheric lead. The Project would not introduce any new sources of lead emissions; consequently, lead emissions are not required to be quantified and are not further evaluated in this analysis.

Toxic Air Contaminants

The ambient background of toxic air contaminants (TACs) is the combined result of many diverse human activities, including gasoline stations, automobiles, dry cleaners, industrial operations, hospital sterilizers, and painting operations. In general, mobile sources contribute more significantly to health risks than do stationary sources. Both BAAQMD and CARB operate a network of monitoring stations that measure ambient concentrations of certain TACs that are associated with strong health-related effects and are present in appreciable concentrations in the Bay Area, as in all urban areas. Ambient concentrations of TACs are similar throughout the urbanized areas of the Bay Area.

There is growing evidence that indicates that exposure to emissions from diesel-fueled engines, about 95 percent of which come from diesel-fueled mobile sources, may result in cancer risks that exceed those attributed to other measured TACs. In 1998, the California Office of Environmental Health Hazard Assessment (OEHHA) issued a health risk assessment that included estimates of the cancer potency of diesel particulate matter (DPM). Because DPM cannot be directly monitored in the ambient air, however, estimates of cancer risk resulting from diesel PM exposure must be based on concentration estimates made using indirect methods (e.g., derivation from ambient measurements of a surrogate compound).

Asbestos is also a TAC of concern due to the demolition of buildings and structures as part of the Project. Asbestos is a fibrous mineral, which is both naturally occurring in ultramafic rock (a rock type commonly found in California) and used as a processed component of building materials. Because asbestos has been proven to cause serious adverse health effects, including asbestosis and lung cancer, it is strictly regulated based on its natural widespread occurrence and its use as a building material.

Sensitive Land Uses

Some persons are considered more sensitive than others to air pollutants. The reasons for heightened sensitivity may include age, health problems, proximity to the emissions source, and duration of exposure to air pollutants. Land uses such as schools, hospitals, and convalescent homes are considered to be relatively sensitive to poor air quality because the very young, the old, and the infirm are more susceptible to respiratory infections and other air quality-related health problems than the general public. Residential areas are considered sensitive to poor air quality because people are often at home for extended periods. Recreational land uses are moderately

sensitive to air pollution, because vigorous exercise associated with recreation places a high demand on the human respiratory system.

The closest residential uses are approximately 250 feet east of the Project Site, on Holcolmb Court. Additional residences are in the Alma Park neighborhood off of California Avenue, two blocks (more than 1,000 feet) west of the Project Site. There are several apartments and condominium projects on the hills east of South Broadway and one apartment complex approximately 650 feet northeast of the closest proposed construction. Las Lomas High School is located to the south and Kaiser Hospital is located to the southwest.

4.2.2 Regulatory Setting

Federal

The federal Clean Air Act requires the U.S. EPA to identify National Ambient Air Quality Standards (NAAQS or "national standards") to protect public health and welfare. National standards have been established for ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide, respirable particulate matter (PM10 and PM2.5), and lead. **Table 4.2-2** shows current national and state ambient air quality standards, as well as the Bay Area attainment status and common sources for each pollutant.

Pursuant to the 1990 federal Clean Air Act amendments, the U.S. EPA classifies air basins (or portions thereof) as "attainment" or "nonattainment" for each criteria air pollutants, based on whether or not the national standards had been achieved. **Table 4.2-2** shows the current attainment status of the vicinity of the Project.

The federal Clean Air Act requires each state to prepare an air quality control plan referred to as the State Implementation Plan (SIP). The federal Clean Air Act amendments added requirements for states containing areas that violate the national standards to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is a living document that is periodically modified to reflect the latest emissions inventories, planning documents, and rules and regulations of air basins as reported by the agencies with jurisdiction over them. The U.S. EPA has responsibility to review all SIPs to determine if they conform to the mandates of the federal Clean Air Act amendments and will achieve air quality goals when implemented. If the U.S. EPA determines a SIP to be inadequate, it may prepare a Federal Implementation Plan (FIP) for the nonattainment area and may impose additional control measures. Failure to submit an approvable SIP or to implement the plan within mandated timeframes can result in sanctions being applied to transportation funding and stationary air pollution sources in the air basin.

Regulation of TACs, termed Hazardous Air Pollutants (HAPs) under federal regulations, is achieved through federal, state and local controls on individual sources. The 1977 federal Clean Air Act amendments required the U.S. EPA to identify National Emission Standards for Hazardous Air Pollutants to protect public health and welfare. These substances include certain volatile organic chemicals, pesticides, herbicides, and radionuclides that present a tangible

TABLE 4.2-2
AMBIENT AIR QUALITY STANDARDS AND BAY AREA ATTAINMENT STATUS

Pollutant	Averaging Time	State Standard	Bay Area Attainment Status for California Standard	Federal Primary Standard	Bay Area Attainment Status for Federal Standard	Major Pollutant Sources
Ozone	8 hour	0.070 ppm	Non-Attainment	0.075 ppm	Non-Attainment	Formed when ROG and NOx react in the presence of sunlight. Major sources include on-road motor vehicles, solvent evaporation, and commercial/ industrial mobile equipment.
	1 hour	0.090 ppm	Non-Attainment	---	---	
Carbon Monoxide	8 hour	9.0 ppm	Attainment	9.0 ppm	Attainment	Internal combustion engines, primarily gasoline-powered motor vehicles
	1 Hour	20 ppm	Attainment	35 ppm	Attainment	
Nitrogen Dioxide	Annual Average	0.030 ppm	---	0.053 ppm	Attainment	Motor vehicles, petroleum refining operations, industrial sources, aircraft, ships, and railroads
	1 Hour	0.180 ppm	Attainment	0.100 ppm	Unclassified	
Sulfur Dioxide	Annual Average	---	---	0.03 ppm	Attainment	Fuel combustion, chemical plants, sulfur recovery plants and metal processing
	24 Hour	0.04 ppm	Attainment	0.14 ppm	Attainment	
	1 Hour	0.25 ppm	Attainment	0.075 ppm	Attainment	
Particulate Matter (PM_{10})	Annual Arithmetic Mean	20 μg/m3	Non-Attainment	---	---	Dust- and fume-producing industrial and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays)
	24 hour	50 μg/m3	Non-Attainment	150 μg/m3	Unclassified	
Particulate Matter ($PM_{2.5}$)	Annual Arithmetic Mean	12 μg/m3	Non-Attainment	15 μg/m3	Attainment	Fuel combustion in motor vehicles, equipment, and industrial sources; residential and agricultural burning; also, formed from photochemical reactions of other pollutants, including NOx, sulfur oxides, and organics.
	24 hour	---	---	35 μg/m3	Non-Attainment	
Lead	Calendar Quarter	---	---	1.5 μg/m3	Attainment	Present source: lead smelters, battery manufacturing & recycling facilities. Past source: combustion of leaded gasoline.
	30 Day Average	1.5 μg/m3	Attainment	---	---	
Hydrogen Sulfide	1 hour	0.03 ppm	Unclassified	No Federal Standard	---	Geothermal Power Plants, Petroleum Production and refining
Visibility Reducing Particles	8 hour	Extinction of 0.23/km; visibility of 10 miles or more	Unclassified	No Federal Standard	---	See $PM_{2.5}$.

NOTE: ppm=parts per million; and μg/m3=micrograms per cubic meter

SOURCE: Bay Area Air Quality Management District (BAAQMD), 2011b, available at http://hank.baaqmd.gov/pln/air_quality/ambient_air_quality.htm as of October 6, 2011; California Air Resources Board (CARB), 2009. *ARB Fact Sheet: Air Pollution Sources, Effects and Control*, http://www.arb.ca.gov/research/health/fs/fs2/fs2.htm, page last reviewed December 2009

hazard, based on scientific studies of exposure to humans and other mammals. There is uncertainty in the precise degree of hazard.

State

The CARB manages air quality, regulates mobile emissions sources, and oversees the activities of county Air Pollution Control Districts and regional Air Quality Management Districts. CARB establishes state ambient air quality standards and vehicle emissions standards. California has adopted ambient standards that are more stringent than the federal standards for the criteria air pollutants and include air quality standards for some pollutants for which there is no corresponding national standard. These are shown in Table 4.2-2. Under the California Clean Air Act patterned after the Federal Clean Air Act, areas have been designated as attainment or nonattainment with respect to the state standards. Table 4.2-2 summarizes the attainment status with California standards in the Bay Area.

Toxic Air Contaminants

The Health and Safety Code defines TACs as air pollutants which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health. The State Air Toxics Program was established in 1983 under Assembly Bill (AB) 1807 (Tanner). A total of 243 substances have been designated TACs under California law; they include the 189 (federal) Hazardous Air Pollutants adopted in accordance with AB 2728. The Air Toxics "Hot Spots" Information and Assessment Act of 1987 (AB 2588) seeks to identify and evaluate risk from air toxics sources; however, AB 2588 does not regulate air toxics emissions. Toxic air contaminant emissions from individual facilities are quantified and prioritized. "High-priority" facilities are required to perform a health risk assessment and, if specific thresholds are violated, are required to communicate the results to the public in the form of notices and public meetings.

In August of 1998, CARB identified DPM as TACs. CARB subsequently developed the *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles* (CARB, 2000). The document represents proposals to reduce diesel particulate emissions, with the goal of reducing emissions and associated health risks by 75 percent in 2010 and by 85 percent in 2020. The program aims to require the use of state-of-the-art catalyzed diesel particulate filters and ultra low sulfur diesel fuel on diesel-fueled engines.

In April 2005, CARB published *Air Quality and Land Use Handbook: A Community Health Perspective* (CARB, 2005). This handbook is intended to give guidance to local governments in the siting of sensitive land uses, such as residences, schools, daycare centers, playgrounds, or medical facilities, near sources of air pollution. There are TAC sources predominantly associated with commercial uses located in the Project Site and surroundings, including gasoline dispensing facilities and dry cleaning operations.

Regional

Air Quality Plans

The 1977 federal Clean Air Act amendments require 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 can be controlled in order to achieve all standards specified in the Clean Air Act. The 1988 California Clean Air Act also requires development of air quality plans and strategies to meet state air quality standards in areas designated as non-attainment (with the exception of areas designated as non-attainment for the state PM standards). Maintenance plans are required for attainment areas that had previously been designated non-attainment in order to ensure continued attainment of the standards. Air quality plans developed to meet federal requirements are referred to as SIPs, discussed above.

Bay Area plans are prepared with the cooperation of the BAAQMD, Metropolitan Transportation Commission (MTC), and the Association of Bay Area Governments (ABAG). On September 15, 2010, the BAAQMD adopted the most recent revision to the Clean Air Plan - the *Bay Area 2010 Clean Air Plan* (BAAQMD, 2010). The *Bay Area 2010 Clean Air Plan* serves to:

- Update the *Bay Area 2005 Ozone Strategy* in accordance with the requirements of the California Clean Air Act to implement "all feasible measures" to reduce ozone;
- Consider the impacts of ozone control measures on particulate matter, air toxics, and greenhouse gases 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 timeframe.

BAAQMD Rules, Regulations, and CEQA Guidelines

The BAAQMD is the regional agency responsible for rulemaking, permitting, and enforcement activities affecting stationary sources in the Bay Area. 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 activities, 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 also toxic emissions and acutely hazardous non-radioactive materials emissions.

Emissions sources subject to these rules are regulated through the BAAQMD's permitting process and standards of operation. Through this permitting process, including an annual permit review, the BAAQMD monitors generation of stationary emissions and uses this information in developing its air quality plans. Any sources of stationary emissions constructed as part of the Project would be subject to the BAAQMD Rules and Regulations. Both federal and state ozone plans rely heavily upon stationary source control measures set forth in BAAQMD's Rules and Regulations.

With respect to construction activities associated with Project development, applicable BAAQMD regulations would relate to portable equipment (e.g., concrete batch plants, and gasoline- or diesel-powered engines used for power generation, pumps, compressors, pile drivers, and cranes), architectural coatings, and paving materials. Equipment used during project construction would be subject to the requirements of BAAQMD Regulation 2 (Permits), Rule 1 (General Requirements) with respect to portable equipment unless exempt under Rule 2-1-105 (Exemption, Registered Statewide Portable Equipment); BAAQMD Regulation 8 (Organic Compounds), Rule 3 (Architectural Coatings); and BAAQMD Regulation 8 (Organic Compounds), Rule 15 (Emulsified and Liquid Asphalts). In addition, the BAAQMD regulates the demolition of buildings or structures that may contain asbestos through Regulation 11 (Hazardous Pollutants) Rule 2 (Asbestos Demolition, Renovation, and Manufacturing).

BAAQMD adopted updated *California Environmental Quality Act (CEQA) Air Quality Guidelines*, including new thresholds of significance in June 2010 and revised in May 2011 (BAAQMD, 2011a), which advise lead agencies on how to evaluate potential air quality impacts with the adopted new thresholds of significance. The thresholds BAAQMD adopted were called into question by an order issued March 5, 2012 in *California Building Industry Association v. BAAQMD,* Alameda Superior Court Case No. RGI0548693. The order requires the BAAQMD thresholds to be subject to further environmental review. The claims made in the case concerned the CEQA impacts of adopting the thresholds, i.e., how the thresholds would affect land use development patterns, and petitioners argued that the thresholds for Health Risk Assessments encompassed issues not addressed by CEQA. Those issues are not relevant to the scientific soundness of the BAAQMD's analysis of what levels of pollutants should be deemed significant, or the threshold to use in assessing any health risk impact the Project will have on the existing environment. The City agrees that those thresholds are supported by substantial evidence. Moreover, the thresholds will not cause any impacts in terms of land use development patterns insofar as this project is concerned, because the proposal to expand Broadway Plaza was not influenced by the BAAQMD guidelines. Accordingly, the analysis herein uses the updated thresholds and methodologies from the BAAQMD *CEQA Air Quality Guidelines* to determine the potential impacts of the Project on the existing environment.

In addition, pursuant to BAAQMD guidance and as further explained below, this EIR addresses exposure of future Project residents and workers to emissions. These discussions do not address impacts of the Project on the existing environment, but are included at the direction of the City to provide a comprehensive analysis of onsite and offsite air quality issues.

Local

Chapter 4 (Built Environment), of the *Walnut Creek General Plan 2025* (City of Walnut Creek, 2006) includes the following goals and policies that are relevant to air quality in Walnut Creek:

- **Goal 3:** Encourage housing and commercial mixed-use development in selected locations that enhances pedestrian access and reduces traffic.
    - *Policy 3.1*: Create opportunities for mixed-use developments.

- **Goal 12:** Make more efficient use of the regional and subregional transportation system.
  - *Policy 12.1*: Promote the use of carpools and vanpools.
  - *Policy 12.2*: Support infill and redevelopment in existing urban areas.
- **Goal 31:** Strive to meet State and federal air-quality standards for the region.
  - *Policy 31.1*: Work with the Bay Area Air Quality Management District (BAAQMD) and the County in promoting better air quality.
  - *Policy 31.2*: Consider additional land use and development criteria, standards, and decisions that have positive impacts on air quality and quality of life in general.
  - *Policy 31.3*: Proactively manage local air quality issues.

4.2.3 Impacts and Mitigation Measures

Significance Criteria

The Project would result in a significant impact if it were to:

1. Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
2. Conflict with or obstruct implementation of the applicable air quality plan;
3. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);
4. Expose sensitive receptors to substantial pollutant concentrations; or
5. Create objectionable odors affecting a substantial number of people.

Significance Thresholds

For the Significance Criteria above, the Bay Area Air Quality Management District, as the agency with jurisdiction over Walnut Creek and the San Francisco Bay Area, has established the following significance thresholds in order for a project to meet the significance criteria outlined above.

Criteria Pollutants

Updated BAAQMD *CEQA Air Quality Guidelines* (BAAQMD, 2011a) establish the following quantitative and qualitative thresholds of significance for criteria pollutant emissions:

- Result in total construction emissions of ROG, NOx, or PM2.5 (exhaust) of 10 tons per year or greater, or 54 pounds per day or greater.
- Exceed a construction emission threshold for PM10 (exhaust) of 15 tons per year or greater, or 82 pounds per day or greater.

- For PM10 and PM2.5 emitted as fugitive dust generated during construction, the BAAQMD Guidelines specify compliance with Best Management Practices as the threshold.

- Result in total operational emissions of ROG, NOx, or PM2.5 of 10 tons per year or greater, or 54 pounds per day or greater.

- Exceed an operational emission threshold for PM10 of 15 tons per year or greater, or 82 pounds per day.

- Result in CO concentrations of 9.0 ppm (8-hour average) and 20.0 ppm (1-hour average).

According to the BAAQMD *CEQA Air Quality Guidelines*, a project's contribution to cumulative impacts for criteria pollutants should be considered significant if the project's impact individually would be significant (i.e., exceeds the BAAQMD's quantitative thresholds).

Odors

The operational threshold is based on complaint history, whereby five complaints per year averaged over three years would be considered significant.

Health Risks and Hazards

The operation of any project with the potential to expose sensitive receptors to substantial levels of TACs (such as DPM) would be deemed to have a potentially significant impact. More specifically, projects that have the potential to expose the public to TACs in excess of the following BAAQMD CEQA thresholds would be considered to have a significant air quality impact:

- Probability of contracting cancer for the Maximally Exposed Individual (MEI) exceeds 10 in one million people for 70 year exposure.

- Ground-level concentrations of non-carcinogenic TACs would exceed a Hazard Index greater than 1 for the MEI.

- Result in an incremental increase in localized annual average concentrations of PM2.5 exceeding 0.3 micrograms per cubic meter from either project construction or operations.

Under the current BAAQMD *CEQA Air Quality Guidelines*, a project would result in a significant localized risk and hazard *cumulative* impact to air quality if it would:

- Result in potential to expose persons to substantial levels of TACs, such that the probability of contracting cancer for the MEI considering all existing sources within 1,000 feet of the Project fence line and Project sources exceeds 100 in one million;

- Result in potential to expose persons to substantial levels of TACs, such that the acute or chronic hazard index would exceed 10 for the Maximally Exposed Individual considering all existing sources within 1,000 feet of the Project fence line ;or

- Result in an incremental increase in localized annual average concentrations of PM2.5 exceeding 0.8 micrograms per cubic meter considering all existing sources within 1,000 feet of the Project fence line and Project sources.

These criteria are applied broadly. CEQA requires an analysis whether the Project would cause impacts on the existing environment. Air quality impacts to future residents and workers of the Project are not within the scope of a CEQA analysis. However, the City has directed that this EIR also evaluate how air quality issues may affect future residents and workers within the Project. Accordingly, the above criteria are applied to non-CEQA issues as well. For ease of reference, both CEQA and non-CEQA issues are addressed together, which means that phrases such as "impact" and "mitigation measure" are applied to both CEQA and non-CEQA analysis. Insofar as the non-CEQA issues are concerned, "impacts" are regulatory issues, and the phrase "mitigation measures" is used to refer to recommended conditions of approval.

Approach to Analysis

Criteria Pollutants

Project-related air quality impacts fall into two categories: short-term impacts due to construction, and long-term impacts due to project operation. First, during project construction (short-term), the Project would affect local particulate concentrations primarily due to fugitive dust sources. Under operations (long-term), the Project would result in an increase in emissions primarily due to motor vehicle trips and on-site stationary sources such as boilers for natural gas combustion for space and water heating. Other sources include minor area sources such as landscaping and use of consumer products.

Air quality assessment methodologies in this section generally conform to those identified by BAAQMD in its updated CEQA Guidelines (BAAQMD, 2011a). Construction emissions were estimated using the California Emissions Estimator Model (CalEEMod) version 2011.1.1. BAAQMD acknowledges CalEEMod as an appropriate tool for assessment of air quality impacts relative to CEQA (Kirk, 2012). This model was also used to calculate the effectiveness of proposed mitigation measures. Construction of the project is expected to begin in 2014 and would occur over a period of approximately three years.Operational phase emissions were also estimated using CalEEMod and incorporate the trip generation figures developed by Kittelson Associates/Dowling, Inc. for the Project.

The screening criteria and methodology included in the BAAQMD's *CEQA Air Quality Guidelines* was followed for localized carbon monoxide "hot spot" analysis.

Lastly, cumulative criteria air pollutant impacts of the project were evaluated based on the BAAQMD *CEQA Guidelines* as discussed under the significance thresholds.

Health Risks and Hazards

A health risk assessment (HRA)[1] was conducted to evaluate the cancer risks and non-cancer health effects associated with exposure to TACs emitted as a result of the project. Cancer risks[2]

[1] An analysis designed to predict the generation and dispersion of air toxics in the outdoor environment, evaluate the potential for exposure of human populations, and to assess and quantify both the individual and population-wide health risks associated with those levels of exposure.

are evaluated based on 70 year exposure, pursuant to BAAQMD's *Health Risk Screening Analysis Guidelines* (BAAQMD, 2005). Non-cancer health risks[3] include adverse health effects from both acute (highest 1-hour) and chronic (average annual) exposure. BAAQMD also requires the analysis of PM2.5 concentrations[4]. The HRA methods are designed to estimate the highest possible, or "upper bound" risks to the most sensitive members of the population (i.e., children, elderly, infirm), as well as those that are potentially exposed to TACs on a routine and prolonged basis (i.e., residents). Air toxics associated with the project include diesel particulate matter (DPM) emissions from construction and project operations.

The HRA was conducted in accordance with technical guidelines developed by federal, state, and regional agencies, including California EPA, California OEHHA *Air Toxics Hot Spots Program Guidance* (OEHHA, 2003), and the BAAQMD's *Health Risk Screening Analysis Guidelines* (BAAQMD, 2005).

The HRA is based on estimated TAC emissions from the project and the length of time those living, working, and recreating in the vicinity of the Project Site could be exposed to TAC emissions. Actual exposures are not measured, but rather are modeled using sophisticated software that uses local meteorology and topography to predict the dispersion of TACs from their source and the resulting concentrations at receptors. The models tend to be conservative, both in terms of the estimated exposure, and the toxic effects of the substances to which people are exposed; thus, the models tend to overestimate the adverse health effect.

For this project, the HRA focused on the health impacts on the new residences as part of the Maximum Mixed-Use scenario and the existing residences, hospitals, and schools for the Maximum Commercial and the Maximum Mixed-Use scenarios. The methodology, calculations, and supporting data for the HRA are included in Appendix C.

According to CalEPA, an HRA should not be interpreted as the expected rates of cancer or other potential health effects, but rather as estimates of potential risk or likelihood of adverse effects based on current knowledge, under a number of highly conservative assumptions and the best assessment tools currently available.

Impacts by Project Scenario

For all significance criteria relating to air quality, Project-related impacts are discussed together under a single Impact Statement for each criterion. Where appropriate, specific discussions are provided for the Maximum Commercial Scenario and the Maximum Mixed-Use Scenario under each criterion.

---

2 Cancer risk is defined as the lifetime probability of developing cancer from exposure to carcinogenic substances. Cancer risks are expressed as the chances in one million of contracting cancer, for example, 10 cancer cases among one million people exposed.

3 Non-cancer adverse health risks are measured against a hazard index, which is defined as the ratio of the predicted incremental exposure concentrations of the various non-carcinogens from the Project to published reference exposure levels (RELs) that can cause adverse health effects.

4 The BAAQMD guidance stipulates inclusion of PM2.5 exhaust emissions only in this analysis (i.e., fugitive dust emissions are addressed through employing BAAQMD's *Best Management Practices* found in Mitigation Measure 4.1-1.

Impacts

Short-term Emissions of Criteria Pollutants

Impact AIR-1: Activities associated with demolition, site preparation, and construction would generate short-term emissions of criteria pollutants, including suspended and inhalable particulate matter and equipment exhaust emissions (Criteria 1 and 2). (Potentially Significant)

For either the Maximum Commercial and Maximum Mixed-Use scenarios of the Project, construction emissions would be relatively short-term but could still cause adverse effects on local air quality. As described in Chapter 3, *Project Description*, construction activities (including demolition of existing structures) would occur approximately from 2014 to 2016 (three years assumed), with demolition and grading projected to occur January through November of 2014.

Demolition activities may result in airborne entrainment of asbestos, a TAC, particularly where structures built prior to 1980 would be demolished. As discussed in Chapter 3, *Project Description*, some of the structures proposed to be demolished were built in the 1960s. However, these materials would be removed in accordance with regulatory requirements prior to demolition (as described below in Mitigation Measure AIR-1b).

In addition to demolition, construction activities would include site preparation and grading as well as general construction. Site preparation and grading activities would cause soil disturbance, which would lead to fugitive dust emissions of PM10 and PM2.5. Heavy duty construction equipment, construction-related on-road trucks, and worker vehicles would also result in exhaust emissions of ROG, NOx, CO, SOx, PM10, and PM2.5 during construction of the Project. Exhaust emissions would vary depending on the number and type of construction equipment used, number of truck trips to the site, and number of workers present. Construction-related fugitive dust would vary from day to day depending on the level and type of activity, silt content of the soil, and the weather. Without mitigation, fugitive dust from construction activities would have the potential to result in high concentrations of PM10 and PM2.5 and could affect local visibility. Consequently, BAAQMD has identified a menu of mitigation measures to be implemented to ensure that fugitive dust from construction impact is a less than significant impact. These measures are identified below as **Mitigation Measure AIR-1a**.

The CalEEMod model was used to quantify construction emissions associated with off-road equipment, fugitive dust, paving, architectural coatings, haul trucks associated with demolition and soils export, on-road worker vehicle emissions and vendor delivery trips. Information in Chapter 3, *Project Description*, was used for the analysis and is included in Appendix C to this Draft EIR. Unmitigated and mitigated construction-related emissions for the Project are presented in **Tables 4.2-3** and **4.2-4** for the Maximum Commercial Scenario and the Maximum Mixed-Use Scenario, respectively. The estimated emissions for each scenario consider the following basic construction phases: demolition; excavation/grading; building construction; asphalt paving; and application of architectural coatings.

As shown in **Tables 4.2-3** and **4.2-4**, unmitigated construction-related emissions would exceed the BAAQMD threshold for NOx for each scenario. The main contributors of NOx during construction would be haul trucks used to export soils excavated for construction of the underground garages and off-road construction equipment. Implementation of the Mitigation Measure AIR-1c would reduce emissions of NOx to a less-thansignificant level.

Mitigation Measure AIR-1a: Construction Emission Controls. During construction, the Project Applicants shall require the construction contractor to implement the measures that are specified under BAAQMD's basic and additional construction mitigation procedures. These include:

- ***Basic Control Measures.*** These measures are required for all construction projects in the BAAQMD jurisdiction:

  - All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
  - All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
  - All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
  - All vehicle speeds on unpaved roads shall be limited to 15 mph. Signage with this speed restriction shall be imposed where appropriate and applicable.
  - All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
  - All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
  - Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

- ***Additional Control Measures.*** Since unmitigated construction emissions would exceed the BAAQMD thresholds, the Project Applicants and their contractors shall implement the following additional control measures during project construction:

  - Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to two minutes. Clear signage shall be provided for construction workers at all access points.
  - The Project shall develop a plan demonstrating that the off-road equipment (more than 50 horsepower) to be used in the construction project (i.e., owned, leased, and subcontractor vehicles) would achieve a project wide fleet-average 20 percent NOx reduction and 45 percent PM reduction compared to the most recent CARB fleet average. Acceptable options for reducing emissions include the use of late model engines, low-emission diesel products, alternative fuels,

TABLE 4.2-3
AVERAGE ANNUAL DAILY CONSTRUCTION-RELATED POLLUTANT EMISSIONS – MAXIMUM COMMERCIAL SCENARIO (pounds/day)[a]

Year	ROG	NOx	Exhaust PM10[b]	Exhaust PM2.5[b]
Unmitigated Emissions				
2014	10	85	4	4
2015	5	33	2	2
2016	21	52	3	3
BAAQMD Construction Threshold	54	54	82	54
Significant Impact?	No	**Yes**	No	No
Mitigated Emissions[c]				
2014	7	51	1	1
2015	4	25	1	1
2016	19	36	1	1
BAAQMD Construction Threshold	54	54	82	54
Significant Impact?	No	No	No	No

[a] Emissions include results modeled with CalEEMod. Additional data and assumptions are described Chapter 3, *Project Description*, and Appendix C.
[b] BAAQMD's construction-related significance thresholds for PM10 and PM2.5 apply to exhaust emissions only and not to fugitive dust.
[c] Mitigation measures were incorporated into the CalEEMod model to reflect the Basic Control Measures described below under Mitigation Measure AIR-1a, per the BAAQMD *CEQA Air Quality Guidelines*.

TABLE 4.2-4
AVERAGE ANNUAL DAILY CONSTRUCTION-RELATED POLLUTANT EMISSIONS - MAXIMUM MIXED-USE SCENARIO (pounds/day)[a]

Year	ROG	NOx	Exhaust PM10[b]	Exhaust PM2.5[b]
Unmitigated Emissions				
2014	6	83	3	3
2015	5	27	1	1
2016	29	47	3	3
BAAQMD Construction Threshold	54	54	82	54
Significant Impact?	No	**Yes**	No	No
Mitigated Emissions				
2014	7	51	1	1
2015	4	21	1	1
2016	27	32	1	1
BAAQMD Construction Threshold	54	54	82	54
Significant Impact?	No	No	No	No

[a] Emissions include results modeled with CalEEMod. Additional data and assumptions are described Chapter 3, *Project Description*, and Appendix C.
[b] BAAQMD's construction-related significance thresholds for PM10 and PM2.5 apply to exhaust emissions only and not to fugitive dust.
[c] Mitigation measures were incorporated into the CalEEMod model to reflect the Basic Control Measures described below under Mitigation Measure AIR-1a, per the BAAQMD *CEQA Air Quality Guidelines*.

engine retrofit technology, after-treatment products, add-on devices such as particulate filters, and/or other options as such become available.[5]

- Require that all construction equipment, diesel trucks, and generators be equipped with Best Available Control Technology for emission reductions of NOx and PM.[5]
- Require all contractors to use equipment that meets CARB's most recent certification standard for off-road heavy duty diesel engines. [5]

Mitigation Measure AIR-1b: Demolition Controls. Demolition and disposal of any asbestos containing building material would be in accordance with the procedures specified by Regulation 11, Rule 2 (Asbestos Demolition, Renovation and Manufacturing) of BAAQMD's regulations.

Mitigation Measure AIR-1c: Off-road Demolition and Grading Equipment Emission Controls. Emission of NOx associated with demolition and grading activities would exceed BAAQMD significance thresholds without mitigation. Excavators engaged in demolition and grading activities shall be equipped with Tier 4 engines. All other off-road construction equipment engaged in demolition and grading activities shall be equipped with Tier 3 or better engines.

Significance after Mitigation: As depicted in **Tables 4.2-3** and **4.2-4**, the implementation of mitigation measures would reduce NOx emissions to below BAAQMD thresholds for either the Maximum Commercial or Maximum Mixed-Use scenario. This impact would be less than significant with mitigation.

Long-term Emissions of Criteria Pollutants

Impact AIR-2: Operation of the Project would result in increased long-term emissions of criteria pollutants (Criteria 1 and 2). (Potentially Significant for both Scenarios)

The Project would result in an increase in criteria air pollutant emissions from a variety of emissions sources, including on-site area sources (e.g., natural gas combustion for space and water heating, landscape maintenance, use of consumer products such as hairsprays, deodorants, cleaning products, etc.) and mobile on-road sources. Exhaust emissions from on-road vehicle traffic associated with the Project were calculated by using the CalEEMod program, which uses EMFAC2011 (CARB's vehicle emissions model for on-road sources). CalEEMod calculates area source emissions based on the Project size and types of land uses.

The Project would result in approximately 9,100 net new vehicle trips per day for the Maximum Commercial Scenario, and approximately 5,508 net new vehicle trips per day for the Maximum Mixed-Use Scenario. **Tables 4.2-5** and **4.2-6** summarize Project-generated mobile and on-site area

[5] The Level 3 Verified Diesel Emissions Control (VDEC) required under Mitigation Measure AIR-3b would also comply with this measure.

emissions of criteria pollutants for the Project in 2017 assuming build-out vehicle trip generation and compare them with BAAQMD significance thresholds.

As indicated in **Table 4.2-5**, Project-related operational emissions of NOx under the Maximum Commercial Scenario would exceed the BAAQMD significance threshold. This analysis is based on Section 4.13 of this EIR. To ensure all potential traffic impacts are identified, the transportation analysis uses project trip generation estimates that do not include any adjustment for mode choice despite high walkability and the availability of transit and particularly the free shuttle that serves the area. Accordingly, the transportation analysis assumes a typical 1 million square-foot shopping center; such centers are not commonly located in areas such as downtown Walnut Creek. Normally, however, air districts, including BAAQMD, acknowledge trip reductions of zero to nine percent based on a project's mix of uses and bike and pedestrian compatibility, and zero to 15 percent based on availability of transit services. See BAAQMD *CEQA Guidelines*, pages 4-12 to 4-13. All of these factors would be positive for the Project and indicate that vehicle trip reductions would be sufficient (compared to standard ITE rates) to reduce NOx impacts to less-than-significant. In addition, Mitigation Measure AIR-2a is identified to further reduce this impact.

> **Mitigation Measure AIR-2a: Operational NOx Emission Reduction – Maximum Commercial Scenario.** The Project Applicant shall implement a voluntary commute trip reduction program with employers to discourage single-occupancy vehicle trips and encourage alternative modes of transportation such as car-pooling, taking transit, walking, and biking. The program may include, but is not limited to, a ride-sharing program for which 50 percent or greater of Project employees are eligible, carpooling encouragement, preferential carpool parking, a transportation coordinator, and ride-matching assistance.

Significance after Mitigation for the Maximum Commercial Scenario: Less than Significant.

As indicated in **Table 4.2-6**, Project-related operational emissions of ROG under the Maximum Mixed-Use Scenario would exceed the BAAQMD significance threshold. Consequently, Mitigation Measure AIR-2b is identified to reduce this impact to a less than significant level Emissions for both scenarios would be significant without mitigation.

> **Mitigation Measure AIR-2b: Operational ROG Emission Controls – Maximum Mixed Use Scenario.** Natural gas-only fireplace hearths

Wood burning fireplaces shall not be installed in proposed residential units. If fireplaces are to be included in the design of residential units, these hearths shall be designed for natural gas combustion only.

Significance after Mitigation for the Maximum Mixed-Use Scenario: Restricting hearths (commonly found in residences) to only natural gas under the Maximum Mixed-Use Scenario would reduce ROG emissions to below the BAAQMD thresholds, even without implementation of any other items in Mitigation Measure AIR-2a. Therefore, operations under the Mixed-Use scenario of the Project would be considered less than significant after mitigation.

TABLE 4.2-5
MAXIMUM COMMERCIAL SCENARIO DAILY OPERATIONAL EMISSIONS FOR THE PROJECT

	Project Emissions - Year 2017 (pounds/day)[a]			
Emissions Source	**ROG**	**NOx**	**PM10**	**PM 2.5**
Unmitigated Emissions				
Area Source	8	<1	<1	<1
Vehicular Source	32	55	55	4
Total	40	55	55	4
BAAQMD Operations Thresholds	54	54	82	54
Significant (Yes or No)?	No	**Yes**	**No**	No
Mitigated Emissions[b]				
Area Source	8	<1	<1	<1
Vehicular Source	31	51	51	4
Total	39	52	51	4
BAAQMD Operations Thresholds	54	54	82	54
Significant (Yes or No)?	No	No	No	No

[a] Emissions were generated using CalEEMod model with a default vehicle mix. Daily estimates are for summertime or wintertime conditions, which ever are greater. Additional data and assumptions are described Chapter 3, *Project Description*, and Appendix C.
[b] Mitigation Measure AIR-2 was incorporated into CalEEMod using default model reductions. Additional assumptions are included in Appendix C.

TABLE 4.2-6
MAXIMUM MIXED-USE SCENARIO DAILY OPERATIONAL EMISSIONS FOR THE PROJECT

	Project Emissions - Year 2017 (pounds/day)[a]			
Emissions Source	**ROG**	**NOx**	**PM10**	**PM 2.5**
Unmitigated Emissions				
Area Source	59	2	17	17
Energy	<1	1	<1	<1
Vehicular Source	20	34	34	3
Total	79	37	51	20
BAAQMD Operations Thresholds	54	54	82	54
Significant (Yes or No)?	**Yes**	No	No	No
Mitigated Emissions[b]				
Area Source	11	<1	<1	<1
Energy	<1	1	<1	<1
Vehicular Source	20	34	34	3
Total	31	34	34	3
BAAQMD Operations Thresholds	54	54	82	54
Significant (Yes or No)?	No	No	No	No

[a] Emissions were generated using the CalEEMod model with a default vehicle mix. Daily estimates are for summertime or wintertime conditions, which ever are greater. Additional data and assumptions are described Chapter 3, *Project Description*, and Appendix C.
[b] The residential hearth percentage was adjusted to 100 percent natural gas. The other Mitigation Measure AIR-2 controls were incorporated into CalEEMod using default model reductions. Additional assumptions are included in Appendix C.

Carbon Monoxide Concentrations from Project Traffic

Project traffic would increase localized carbon monoxide concentrations at intersections in the project vicinity (Criterion 4). (Less than Significant)

According to the BAAQMD *CEQA Air Quality Guidelines*, a Project would result in a less-than-significant impact to localized CO concentrations if the following screening criteria are met:

1. Project is consistent with an applicable congestion management program established by the county congestion management agency for designated roads or highways, regional transportation plan, and local congestion management agency plans.

2. The project traffic would not increase traffic volumes at affected intersections to more than 44,000 vehicles per hour.

3. The project traffic would not increase traffic volumes at affected intersections to more than 24,000 vehicles per hour where vertical and/or horizontal mixing is substantially limited (e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway).

The Project under either Project scenario would not exceed the standards included in the Congestion Management Program established by the Contra Costa Transportation Authority (CCTA). In regards to the second and third screening criteria, intersection traffic volumes (including minimal external Project traffic) would be substantially less than 44,000 and 24,000 vehicles per hour, respectively. The estimated increase in traffic volumes generated by the Project would not be substantial relative to background traffic conditions, nor would Project traffic significantly disrupt daily traffic flow on area roadways.

Based on the BAAQMD's criteria, Project-related traffic would not lead to violations of the carbon monoxide standards and therefore, no further analysis was conducted for carbon monoxide impacts of the project at these intersections. This impact would be considered less than significant.

Mitigation: None required.

Objectionable Odors

The Project would not create substantial objectionable odors affecting a substantial number of people (Criterion 5). (Less than Significant)

The Project under either Project scenario would not include uses that have been identified by BAAQMD as potential sources of objectionable odors. Sources of odors include restaurants, manufacturing plants, and agricultural operations, and industrial operations such as wastewater treatment plants and solid waste transfer stations or landfills. While sources that generate

objectionable odors must comply with air quality regulations, the public's sensitivity to locally produced odors often exceeds regulatory thresholds.

The operation of the Project would not generate objectionable odors. The Project includes commercial uses only (Maximum Commercial Scenario) or commercial and residential uses (Maximum Mixed-Use Scenario), land uses that are not expected to generate objectionable odors. The Project's commercial uses would generally include retail, office and restaurants. Odors associated with any food services would need to comply with local ordinances regarding appropriate venting of cooking areas. Therefore, the Project would have a less-than-significant odor impact because it would not create substantial objectionable odors affecting a substantial number of people.

Mitigation: None required.

Toxic Air Contaminants – Project Construction

Impact AIR-3: The Project would expose persons to substantial levels of TACs, during short-term construction activities, which may lead to adverse health effects (Criterion 4). (Significant and Potentially Unavoidable)

Project construction activities would produce DPM and PM2.5 emissions due to combustion equipment such as loaders, backhoes, and cranes, as well as haul truck trips. These emissions could result in elevated concentrations of DPM and PM2.5 at nearby receptors. These elevated concentrations could lead to an increase in the risk of cancer or other health impacts. Screening tables of the BAAQMD for assessing increased cancer risk, health indices and PM2.5 concentrations from construction activities indicated a potentially significant impact for all three of these risk and hazard categories given the size of the proposed development scenarios and the proximity of sensitive receptors. Consequently, further air modeling analysis was performed that assumed implementation of Mitigation Measure AIR-3b regarding the use of off-road diesel equipment with engines fitted with a Level 3 Verified Diesel Emissions Control (VDEC). AIR-3b sets a minimum standard for off-road diesel equipment, but a Project-specific construction plan, including equipment specifications, phasing, intensity, and duration, was not considered in the modeling analysis. Rather, the modeling analysis assumed the BAAQMD default values.

Maximum Commercial Scenario. A summary of the health impacts related to construction of the Maximum Commercial scenario is found in **Table 4.2-7**. The following results incorporate Mitigation Measure AIR-1a and AIR-3b.

As shown in **Table 4.2-7**, the maximum cancer risk for an existing residence-adult and residence-child (located to the east of the Project Site and along the delivery/haul route) would be 1.6 and 17.6 persons per million, respectively. The maximum cancer risk for the nearest school (Las Lomas High School) receptor would be 0.5 persons per million. Thus, the cancer risk due to

TABLE 4.2-7
CONSTRUCTION-RELATED HEALTH IMPACTS – MAXIMUM COMMERCIAL SCENARIO[a]

Receptor Type	Cancer Risk (persons per million)	Chronic Impact	Acute Impact	PM2.5 Concentration (µg/m3)
School Children	0.46	0.01	0.06	0.04
Existing Residence (adult/child)	1.55/17.6	0.02	0.07	0.12
BAAQMD Significance Criteria	10	1	1	0.3
Significant Impact?	**Yes**	No	No	No

[a] Detailed assumptions and methodology of the HRA are included in Appendix C.

SOURCE: KBE, 2012.

construction activities alone is above the BAAQMD threshold of 10 per million and would be significant and potentially unavoidable with mitigation.

The chronic health index (HI) would be less than 0.1 at all receptors. The chronic HI would be below the BAAQMD threshold of 1 and the impact of Project construction would be less than significant with respect to chronic health hazards. The acute HI would be less than 0.6 at all receptors. The acute HI would be below the BAAQMD threshold of 1 and the impact of Project construction would be less than significant with respect to acute health hazards.

The maximum annual PM2.5 concentrations as a result of Project construction would be 0.04 and 0.12 $\mu g/m^3$ for the nearest school and the existing residences, respectively. The construction-related annual PM2.5 concentration is below the BAAQMD threshold of 0.3 $\mu g/m^3$, and hence is considered less than significant.

Maximum Mixed-Use Scenario. A summary of the health impacts related to construction of the Maximum Mixed-Use Scenario are found in **Table 4.2-8**. The following results incorporate use of off-road diesel equipment with engines fitted with a Level 3 Verified Diesel Emissions Control (VDEC) as well as Mitigation Measure AIR-1a.

As shown in **Table 4.2-8**, the maximum cancer risk for the new residence-adult and residence-child at the Project Site (assuming overlap of Project construction and new residence habitation for one year) would be 2.4 and 26.6 persons per million, respectively. The maximum cancer risk for an existing residence-adult and residence-child (located to the east of the Project Site and along the delivery/haul route) would be 1.4 and 16.3 persons per million, respectively. The maximum cancer risk for the nearest school (Las Lomas High School) receptor would be 0.5 persons per million. Thus, the cancer risk due to construction activities alone is above the BAAQMD threshold of 10 per million and would be significant and unavoidable.

TABLE 4.2-8
CONSTRUCTION-RELATED HEALTH IMPACTS – MAXIMUM MIXED-USE SCENARIO[a]

Receptor Type	Cancer Risk (persons per million)	Chronic Impact	Acute Impact	PM2.5 Concentration (µg/m3)
New Residence (adult/child)	2.35/26.6	0.06	0.07	0.30
School Children	0.42	0.01	0.06	0.04
Existing Residence (adult/child)	1.4/16.3	0.02	0.07	0.11
BAAQMD Significance Criteria	10	1	1	0.3
Significant Impact?	**Yes**	No	No	No

[a] Detailed assumptions and methodology of the HRA are included in Appendix C.

SOURCE: KBE, 2012.

The chronic HI would be less than 0.1 at all receptors. The chronic HI would be below the BAAQMD threshold of 1 and the impact of Project construction would be less than significant with respect to chronic health hazards. The acute HI would be less than 0.1 at all receptors. The acute HI would be below the BAAQMD threshold of 1 and the impact of Project construction would be less than significant with respect to acute health hazards.

The maximum annual PM2.5 concentrations as a result of Project construction would be 0.30, 0.04, and 0.11 µg/m^3 for the new residence at the Project Site, the nearest school, and the existing residences, respectively. The construction-related annual PM2.5 concentration would not exceed the BAAQMD threshold of 0.3 µg/m^3, and hence is considered less than significant.

Mitigation Measures

Mitigation Measure AIR-3a: Implement Mitigation Measure AIR-1a (Construction Emission Controls).

Mitigation Measure AIR-3b: ***Clean Diesel Engines for Construction Equipment.*** The Project Applicants shall ensure that construction contract specifications include a requirement that all off-road construction equipment used for Project improvements be equipped with a Level 3 Verified Diesel Emissions Control (VDEC), which would reduce diesel particulate emissions by at least 85 percent. This measure is included in the risks calculated in Tables 4.2-7 and 4.2-8.

Mitigation Measure AIR-3c: ***Restrict Haul Truck Routes.*** Haul truck contractors exporting excavated soil shall be restricted from using Mt. Diablo Boulevard as a condition of contract. Emissions from haul trucks account for approximately 27 percent of the increased cancer risk and the majority of this increase would be from trucks travelling on Mt. Diablo Boulevard. Therefore, restricting haul trucks from using Mt. Diablo Boulevard to the extent feasible would further reduce the increased cancer risk.

Mitigation Measure AIR-3d: ***Delayed Occupancy of Residential Units.*** Exposure of occupants of new residential units proposed under the Maximum Mixed-Use Scenario to

significant increased cancer risks from construction-related emissions shall be avoided by delaying occupancy until after the completion of demolition and excavation activities, unless the Project Applicants perform a new Health Risk Assessment prior to the issuance of a building permit for the residential units, demonstrating that the health risk to Project residents from the remaining demolition and excavation activities would be less than significant.

Mitigation Measure AIR-3e: ***Construction Plan.*** Prior to the issuance of any demolition or construction permits, the Project Applicants shall prepare and provide to the City for City approval a written construction plan to minimize exposure of sensitive receptors to health risks. Such a plan shall include sufficient information as to the type, location, and duration and intensity of use of equipment so as to demonstrate that no significant health risk impacts will result during Project demolition and construction.

Significance after Mitigation: Because the required construction plan identified in Mitigation Measure AIR-3e has not yet been prepared, and the reductions associated with the implementation of Mitigation Measure AIR-3c have not been calculated or applied, at this time, this impact is considered Significant and Potentially Unavoidable.

Toxic Air Contaminants – Project Operation

The Project would expose persons to substantial levels of TACs during Project operations, which may lead to adverse health effects (Criterion 4). (Less than Significant)

Project operation would produce DPM and PM2.5 emissions due to motor vehicle traffic including employees, customers, deliveries, and new residences. These emissions could result in elevated concentrations of DPM and PM2.5. These elevated concentrations could lead to an increase in the risk of cancer or other health impacts.

Maximum Commercial Scenario. A summary of the health impacts related to Project operations of the Maximum Commercial scenario are found in **Table 4.2-9**.

TABLE 4.2-9
OPERATION-RELATED HEALTH IMPACTS – MAXIMUM COMMERCIAL SCENARIO[a]

Receptor Type	Cancer Risk (persons per million)	Chronic Impact	Acute Impact	PM2.5 Concentration (µg/m3)
School Children	0.08	<0.01	<0.01	0.02
Existing Residence (adult/child)	3.03/1.47	<0.01	<0.01	0.07
BAAQMD Significance Criteria	10	1	1	0.3
Significant Impact?	No	No	No	No

[a] Detailed assumptions and methodology of the HRA are included in Appendix C.

SOURCE: KBE, 2012.

As shown above in **Table 4.2-9**, the maximum cancer risk for an existing residence-adult and residence-child (located to the east of the Project Site) would be 3.0 and 1.5 persons per million, respectively. The maximum cancer risk for the nearest school (Las Lomas High School) receptor would be 0.1 persons per million. Thus, the cancer risk due to Project operations alone is below the BAAQMD threshold of 10 per million and would be less than significant.

The chronic HI would be less than 0.1 at all receptors. The chronic HI would be well below the BAAQMD threshold of 1 and the impact of the Project would be less than significant. The acute HI would be less than 0.1 at all receptors. The acute HI would be well below the BAAQMD threshold of 1 and the impact of the Project would be less than significant.

The maximum annual PM2.5 concentrations as a result of Project operation would be 0.02 and 0.07 $\mu g/m^3$ for the nearest school and the existing residences, respectively. The operation-related annual PM2.5 concentration is below the BAAQMD threshold of 0.3 $\mu g/m^3$, and hence is considered less than significant.

Maximum Mixed-Use Scenario. A summary of the health impacts related to Project operations of the Maximum Mixed-Use scenario are found in **Table 4.2-10**.

TABLE 4.2-10
OPERATION-RELATED HEALTH IMPACTS – MAXIMUM MIXED-USE SCENARIO[a]

Receptor Type	Cancer Risk (persons per million)	Chronic Impact	Acute Impact	PM2.5 Concentration (µg/m3)
New Residence (adult/child)	1.81/0.88	<0.01	<0.01	0.04
School Children	0.06	<0.01	<0.01	0.01
Existing Residence (adult/child)	2.08/1.01	<0.01	<0.01	0.04
BAAQMD Significance Criteria	10	1	1	0.3
Significant Impact?	No	No	No	No

[a] Detailed assumptions and methodology of the HRA are included in Appendix C.

SOURCE: KBE, 2012.

As shown above in **Table 4.2-10**, the maximum cancer risk for the new residence-adult and residence-child at the Project Site would be 1.8 and 0.8 persons per million, respectively. The maximum cancer risk for an existing residence-adult and residence-child (located to the east of the Project Site) would be 2.1 and 1.0 persons per million, respectively. The maximum cancer risk for the nearest school (Las Lomas High School) receptor would be 0.1 persons per million. Thus, the cancer risk due to Project operations alone is below the BAAQMD threshold of 10 per million and would be less than significant.

The chronic HI would be less than 0.1 at all receptors. The chronic HI would be well below the BAAQMD threshold of 1 and the impact of the Project would be less than significant. The acute HI

would be less than 0.1 at all receptors. The acute HI would be well below the BAAQMD threshold of 1 and the impact of the Project would be less than significant.

The maximum annual PM2.5 concentrations as a result of Project operation would be 0.04, 0.01, and 0.04 $\mu g/m^3$ for the new residence at the Project Site, the nearest school, and the existing residences, respectively. The operation-related annual PM2.5 concentration is below the BAAQMD threshold of 0.3 $\mu g/m^3$, and hence is considered less than significant.

Mitigation: None required.

Toxic Air Contaminants – New Receptors

The Project would expose persons (new receptors) to substantial levels of TACs, which may lead to adverse health effects (Criterion 4). (Less than Significant)

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

BAAQMD has developed a geo-referenced database of permitted emissions sources throughout the San Francisco Bay Area, and has developed the Stationary Source Risk & Hazard Analysis Tool (dated May 2011) for estimating cumulative health risks from permitted sources. Eight permitted sources are located within 1,000 feet of the fence line of the Project.

BAAQMD *CEQA Air Quality Guidelines* also require the inclusion of surface streets within 1,000 feet of the Project with annual average daily traffic (AADT) of 10,000 or greater.[6] Upon review, the health impacts from Mt Diablo Boulevard with 25,000 AADT and located within 100 feet of the Project Site were included. Main Street with 15,064 AADT and located within 50 feet of the Project Site was included in the analysis. Finally, Newell Avenue with 27,900 AADT and located within 50 feet of the Project Site was included in the analysis.

A summary of the health impacts for the new residences to be developed under the Maximum Mixed-Use scenario of the Project is found in **Table 4.2-11**. No residences would be developed under the Maximum Commercial scenario.

Notably, for individual projects/new receptors, the threshold of significance is based the source with the highest cancer risk, PM2.5 concentration, or hazard in comparison to other sources within the 1,000 foot radius of the receptor.[7]

---

6 BAAQMD County Surface Street Screening Tables, May 201 and CEHTP Traffic Linkage Service Demonstration, http://www.ehib.org/traffic_tool.jsp

7 BAAQMD, *Recommended Methods for Screening and Modeling Local Risk and Hazards*, May 2011.

TABLE 4. 2-11
HEALTH IMPACTS FOR NEW RECEPTORS – MAXIMUM MIXED-USE SCENARIO[a]

Site #	Facility Type	Address	Cancer Risk (persons per million)	Chronic Hazard Impact	PM2.5 Concentration (µg/m3)
10016	Classic Cleaning	1350 Mt Diablo Blvd	2.57	0.04	0
19741	Nordstrom	1200 Broadway Plaza	-	-	-
G7639	Coast Service	1387 So California Blvd	1.07	0	0
G1735	Kaiser Shell	1599 Newell Avenue	1.26	0.002	0
G1729	Chevron Station	1700 Mt Diablo Boulevard	8.45	0.012	0
14452	Herald's Cleaners	1525 Cypress Street	0	0	0
16262	Macy's	1301 Broadway Plaza	0	0	0
9254	Hosanna Cleaners	1280C Newell Ave	1.28	0.02	0
		Roadway Sources			
		Mt Diablo Blvd	2.26	0.02	0.08
		Main Street	2.33	0.02	0.08
		Newell Ave	2.97	0.02	0.11
		Highest Source Impact	8.45	0.04	0.11
		BAAQMD Significance Criteria (new receptor)	10	1	0.3
		Potentially Significant Impact?	No	No	No

[a] Detailed assumptions and methodology of the HRA are included in Appendix C.

Source: KBE, 2012.

The health impacts from nearby sources in the area would have an impact on new residence receptors associated with the Maximum Mixed-Use scenario of the Project. The highest cancer risk from nearby sources would be 8.45 persons per million (due to the nearby Chevron Station). Thus, the cancer risk for new receptors is below the BAAQMD threshold of 10 per million and would be less than significant.

The highest hazard index from nearby sources would be 0.04; well below the BAAQMD threshold of 1 and the impact of the proposed residences of the Project would be less than significant. The highest annual PM2.5 concentrations would be 0.11 $\mu g/m^3$ as a result of roadway traffic on Newell Avenue. This PM2.5 concentration at proposed residences would be below the BAAQMD threshold of 0.3 $\mu g/m^3$, and hence is considered less than significant.

Mitigation: None required.

Cumulative Impacts

Geographic Context

The cumulative geographic context includes the Bay Area Air Basin as well as existing and potential future sources of TACs in the Project Site and surroundings.

Regional Criteria Pollutants

Impact AIR-4: The Project, together with anticipated cumulative development in the Bay Area Air Basin, would contribute to regional criteria pollutants (Criterion 3). (Less than Significant with Mitigation)

According to the BAAQMD, no single project is sufficient in size to, by itself, result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. In addition, according to the BAAQMD *CEQA Air Quality Guidelines*, if a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions (BAAQMD, 2010a). Alternatively, if a project does not exceed the identified significance thresholds, then the project would not be considered cumulatively considerable and would result in less-than-significant air quality impacts.

As described above in Impacts AIR-1 and AIR-2, Project emissions from construction and operations, respectively, would be less than the BAAQMD thresholds after implementation of mitigation for both Scenarios. Consequently the Project would not result in a cumulatively considerable contribution to regional emissions of ROG, NOx, PM10 or PM2.5.

Toxic Air Contaminants – Cumulative Exposure

The Project would cumulatively expose persons to substantial levels of toxic air contaminants (TACs), which may lead to adverse health effects (Criterion 4). (Less than Significant)

The BAAQMD's *CEQA Air Quality Guidelines* include standards and methods for determining the significance of cumulative health risk impacts for new projects. The method for determining health risk requires the review of health risk from permitted sources and major roadways in the vicinity of a project (i.e., within a 1,000-foot radius of the source), then adding the project impacts to determine whether the cumulative health risk thresholds are exceeded. A summary of the cumulative health impacts for the existing residences are found in **Table 4.2-12**.

The health impacts from the Project construction and operations plus other sources (permitted sources and roadways) in the area would have a cumulative impact on existing residence receptors. The maximum cumulative cancer risk for existing residence would be 25.1 and 39.8 persons per million for residence-adult and residence child, respectively. Thus, the cumulative cancer risk is below the BAAQMD threshold of 100 per million and would be less than significant.

TABLE 4.2-12
CUMULATIVE HEALTH IMPACTS[a]

Site #	Facility Type	Address	Cancer Risk (persons per million)	Chronic Hazard Impact	PM2.5 Concentration (µg/m3)
10016	Classic Cleaning	1350 Mt Diablo Blvd	2.57	0.04	0
19741	Nordstrom	1200 Broadway Plaza	-	-	-
G7639	Coast Service	1387 So California Blvd	1.07	0.00	0
G1735	Kaiser Shell	1599 Newell Avenue	1.26	0.002	0
G1729	Chevron Station	1700 Mt Diablo Boulevard	8.45	0.012	0
14452	Herald's Cleaners	1525 Cypress Street	0	0	0
16262	Macy's	1301 Broadway Plaza	0	0	0
9254	Hosanna Cleaners	1280C Newell Ave	1.28	0.02	0
		Permitted Sources Total	14.6	0.08	0
		Roadway Sources			
		Mt Diablo Blvd	2.26	0.02	0.08
		Main Street	2.33	0.02	0.08
		Newell Ave	2.97	0.02	0.11
		Roadway Total	7.56	0.06	0.27
		Project Adult/Child	2.93/17.6	00.06	0.30
		Grand Total	25.1/39.8	0.20	0.57
		BAAQMD Cumulative Significance Criteria	100	10	0.8
		Significant Cumulative Impact?	No	No	No

[a] Detailed assumptions and methodology of the HRA are included in Appendix C.

SOURCE: KBE, 2012.

The cumulative HI would be 0.20. The HI would be well below the BAAQMD threshold of 10 and the impact of the Project would be less than significant. The maximum cumulative annual PM2.5 concentrations would be 0.57 µg/m^3. The cumulative annual PM2.5 concentration is below the BAAQMD threshold of 0.8 µg/m^3, and hence is considered less than significant.

Mitigation: None required.

4.2.4 References

Bay Area Air Quality Management District (BAAQMD), 2005. *BAAQMD Health Risk Screening Analysis Guidelines*, http://www.baaqmd.gov/pmt/air_toxics/risk_procedures_policies/hrsa_guidelines.pdf, June 2005.

Bay Area Air Quality Management District (BAAQMD), 2010. *Bay Area 2010 Clean Air Plan*, September 15, 2010.

Bay Area Air Quality Management District (BAAQMD), 2011a. *CEQA Air Quality Guidelines*, adopted May 2011. Available at www.baaqmd.gov

Bay Area Air Quality Management District (BAAQMD), 2011b. *Ambient Air Quality Standards and Bay Area Attainment Status*, http://hank.baaqmd.gov/pln/air_quality/ambient_air_quality.htm, as of October 6, 2011.

California Air Resource Board (CARB). 2000. *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*. October 2000.

California Air Resources Board (CARB), 2004. *2004 Revisions to the California State Implementation Plan for Carbon Monoxide*. July 22, 2004.

California Air Resources Board (CARB), 2005. *Air Quality and Land Use Handbook: A Community Health Perspective*. April 2005.

California Air Resources Board (CARB), 2009. *ARB Fact Sheet: Air Pollution Sources, Effects and Control*, http://www.arb.ca.gov/research/health/fs/fs2/fs2.htm. Page last reviewed December 2009.

California Air Resources Board (CARB), 2011. *Summaries of Air Quality Data*, 2008–2010; http://www.arb.ca.gov/adam/cgi-bin/db2www/polltrendsb.d2w/start.

City of Walnut Creek, 2006. *Walnut Creek General Plan 2025, Chapter 4 Built Environment*. April 4, 2006.

Dockery, D. W., and Pope, C.A., III. 2006. *Health Effects of Fine Particulate Air Pollution: Lines that Connect*. Journal Air & Waste Management Association, pp. 30-37. June.

Kirk, Allison, Senior Environmental Planner, Bay Area Air Quality Management District, e-mail correspondence to Chris Sanchez at Environmental Science Associates, January 27, 2012.

Office of Environmental Health Hazard Assessment (OEHHA), 2003. *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*, http://www.oehha.org/air/hot_spots/pdf/HRAguidefinal.pdf.