
3.3 AIR QUALITY AND HEALTH RISK

This EIR/EA section describes the impacts of the South San Francisco Ferry Terminal Project on local and regional air quality. The section has been prepared using methodologies and assumptions recommended in the air quality impact assessment guidelines of the Bay Area Air Quality Management District (BAAQMD) (BAAQMD 1996). The primary air quality concerns related to the project would be the localized traffic generated around the ferry terminals and also the ferry boat emissions. The ferry and vehicular activity would contribute to regional air emissions, and the vehicular traffic could potentially cause carbon monoxide “hotspots” where traffic is congested. The air quality assessment considers both “criteria air pollutants” (pollutants for which state and federal ambient standards exist) and “toxic air contaminants” (pollutants that pose human health risks).

Preparation of this section used data from various sources, including the *BAAQMD CEQA Guidelines*, a Human Health Risk Assessment prepared by ENVIRON Corporation (included as Appendix D of this EIR/EA), and the *Oyster Point Ferry Terminal Transportation Report* prepared by Wilbur Smith Associates (included as Appendix F of this EIR/EA). Full bibliographic entries for all reference materials are provided in Section 3.3.4 (References).

The 2003 WTA PEIR for the expansion of ferry service in the Bay Area evaluated environmental impacts related to cumulative emissions from the proposed expansion compared to a no project alternative. The 2003 WTA PEIR addressed impacts related to air quality in the areas of regional cumulative emissions, cold start emissions at the terminals, emission of toxic pollutants through ferry exhaust, deposition of pollutants to the Bay, construction activities at the ferry terminals, and emissions associated with dredging activities. As this is a project-level analysis that tiers from and incorporates the 2003 WTA PEIR, this section evaluates the site-specific environmental impacts related to localized air pollutants, exposure of sensitive receptors to substantial pollutants and odors, and cumulatively considerable net increases of pollutants.

Two comment letters related to air quality were received in response to the December 17, 2004, Notice of Preparation (NOP) circulated for the project. These two letters were received from the Bay Area Air Quality Management District and the Air Resources Board. They were related to health effects, emissions with and without the project, and the effect of diesel emissions. The NOP and a summary of issues raised during the Public Scoping process are included in Appendix A of this EIR/EA.

3.3.1 ENVIRONMENTAL SETTING

■ Climate and Topography

The San Francisco Bay Area’s regional meteorological conditions are dominated by the semi-permanent high pressure area in the eastern Pacific Ocean, which is in large part responsible for the cool, dry summers and mild, moderately wet winters. This pressure system is also responsible for the daytime sea breeze that tends to provide fresh air to the Bay Area.

Region-wide temperature inversions, caused by warm air positioned above the cool daytime surface air, prohibit vertical mixing of air. Thermal inversions may be caused by flows of cool marine air at the surface moving inland from the Golden Gate or by rapid cooling of the surface after sunset, which causes the air close to the surface to rapidly cool. Air pollution potential in the region is highest when inversions are strong and winds are light.

The project is located within the San Francisco Peninsula (Peninsula) climatological subregion that extends from northwest of San Jose to the Golden Gate. The location of the Santa Cruz Mountains throughout the center of the Peninsula has great influence on the climate and air quality of the area. The mountains block the typical high incidence of cool, foggy weather that occurs along the coast. Warmer temperatures and fewer foggy days characterize the southeastern area of the peninsula, where the marine layer is blocked by the ridgeline to the west. However, in the north end the marine layer is able to flow across most of San Francisco due to its low topography. In the South San Francisco area, near the project site, the marine air is able to penetrate the bay through the lower elevations at the San Bruno Gap.

Annual average wind speeds range from 5 to 10 miles per hour (mph) throughout the Peninsula with higher wind speeds in the project area due to the low-lying areas in the mountain ranges. The prevailing winds in the peninsula are westerly and in the project area the winds are in a southwest wind pattern. These winds typically dilute pollutants and transport them away from the area.

Average maximum temperatures during summer in the area between Half Moon Bay, west of the project site, and San Francisco, north of the project site, are in the mid-60s Fahrenheit (F), while minimum winter temperatures are approximately low-40s F.

■ Air Quality Standards

Both the federal and state governments have established ambient air quality standards for outdoor concentrations of various pollutants in order to protect public health. The national and state ambient air quality standards have been set at levels where concentrations could be generally harmful to human health and welfare, and to protect the most sensitive persons from illness or discomfort with a margin of safety. Applicable standards are identified below.

The air pollutants for which national and state standards have been promulgated and which are most relevant to air quality planning and regulation in the Bay Area include ozone (O_3), carbon monoxide (CO), respirable particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), sulfur dioxide (SO_2), and lead. In addition, toxic air contaminants are of concern in the Bay Area. Each of these is briefly described below.

- *Ozone (O_3)* is a gas that is formed when reactive organic gases (ROG) and nitrogen oxides (NO_x)—both byproducts of internal combustion engine exhaust—undergo slow photochemical reactions in the presence of sunlight. Ozone concentrations are generally highest during the summer months when direct sunlight, light wind, and warm temperature conditions are conducive to its formation.
- *Carbon Monoxide (CO)* is a colorless, odorless gas produced by the incomplete combustion of fuels. CO concentrations tend to be the highest during the winter morning, with little to no wind, when

surface-based inversions trap the pollutant at ground levels. Because CO is emitted directly from internal combustion engines—unlike O₃—and motor vehicles operating at slow speeds are the primary source of CO in the Bay Area, the highest ambient CO concentrations are generally found near congested transportation corridors and intersections.

- *Respirable Particulate Matter (PM₁₀)* and *Fine Particulate Matter (PM_{2.5})* consist of extremely small, suspended particles or droplets 10 microns and 2.5 microns or smaller in diameter. Some sources of particulate matter, like pollen and windstorms, are naturally occurring. However, in populated areas, most particulate matter is caused by road dust, diesel soot, combustion products, abrasion of tires and brakes, and construction activities.
- *Sulfur dioxide (SO₂)* is a colorless, extremely irritating gas or liquid. It enters the atmosphere as a pollutant mainly as a result of burning high sulfur-content fuel oils and coal, and from chemical processes occurring at chemical plants and refineries.
- *Lead* occurs in the atmosphere as particulate matter. The combustion of leaded gasoline is the primary source of airborne lead in the Bay Area. The use of leaded gasoline is no longer permitted for on-road motor vehicles so most such combustion emissions are associated with off-road vehicles such as racecars. Other sources of lead include the manufacturing and recycling of batteries, paint, ink, ceramics, ammunition, and secondary lead smelters.
- *Toxic Air Contaminants* refer to a diverse group of air pollutants that can affect human health, but have not had ambient air quality standards established for them. This is not because they are fundamentally different from the pollutants discussed above, but because their effects tend to be local rather than regional.

■ Existing Regional Air Quality

The average daily emissions inventory for the entire Bay Area and San Mateo County is summarized in Table 3.3-1. As shown, exhaust emissions from mobile sources generate the majority of ROG, NO_x, and CO in the Bay Area.

Measurements of ambient concentrations of the criteria pollutants are used by the U.S. Environmental Protection Agency (U.S. EPA) and the California Air Resources Board (ARB) to assess and classify the air quality of each regional air basin, county, or, in some cases, a specific urbanized area. The classification is determined by comparing actual monitoring data with national and state standards. If a pollutant concentration in an area is lower than the standard, the area is classified as being in “attainment” for that pollutant. If the pollutant concentration exceeds the standard, the area is classified as a “nonattainment” area. If there are not enough data available to determine whether the standard is exceeded in an area, the area is designated “unclassified.”

The U.S. EPA and the ARB use different standards for determining whether the Bay Area is an attainment area. Under national standards, the Bay Area is currently classified as a nonattainment area for O₃. However, 2003 marked the third consecutive year that ambient O₃ concentrations throughout the Bay Area did not exceed national standards. This condition does not constitute a formal redesignation of the Bay Area into the attainment category. The next step is for the ARB to submit to the U.S. EPA a plan demonstrating

how the area will continue to maintain the national standard for 10 years. Once the plan is submitted, the ARB can request the U.S. EPA to redesignate the Bay Area as an attainment area for O₃. The Bay Area is in attainment or designated as unclassified for all other pollutants under national standards.

Table 3.3-1 2004 Estimated Average Daily Emissions						
<i>Emissions Source</i>	<i>Emissions in Tons per Day</i>					
	<i>ROG</i>	<i>NO_x</i>	<i>CO</i>	<i>SO_x</i>	<i>PM₁₀</i>	<i>PM_{2.5}</i>
San Francisco Bay Area Air Basin						
Stationary Sources	89.4	68.3	42.3	58.6	16.0	12.3
Area-wide Sources	90.1	19.3	174.4	0.6	151.6	48.6
Mobile Sources	233.4	472.3	2,104.6	12.4	21.3	17.1
Total Emissions	412.9	559.9	2,321.3	71.6	188.9	78.0
San Mateo County - San Francisco Bay Area Air Basin						
Stationary Sources	7.2	1.9	1.7	0.04	1.0	0.8
Area-wide Sources	9.3	2.3	19.2	0.07	15.7	5.1
Mobile Sources	26.3	57.0	248.7	0.75	2.3	1.8
Total Emissions	42.8	61.1	269.6	0.85	19.0	7.7
SOURCE: California Air Resources Board 2005						

Under state standards, the Bay Area is designated as a nonattainment area for O₃ and PM₁₀, and an attainment area for all other pollutants.

■ Existing Local Air Quality

The BAAQMD monitors ambient air pollutant concentrations through a series of monitoring stations located throughout the Bay Area. While no monitoring station is located in South San Francisco, BAAQMD samples local air quality from the nearby Arkansas Street station in San Francisco, approximately eight miles from the project site. Monitoring station measurements indicate that air quality in the vicinity of South San Francisco performs well against state standards for criteria air pollutants. No violations of the state standard for O₃ occurred between 1993 and 1997 at the Arkansas Street-San Francisco monitoring station, although locally generated emissions of O₃ precursors, ROG and NO_x, affect downwind areas where violations do occur.

Ambient PM₁₀ concentrations have violated the state standard on occasion in the vicinity of South San Francisco. PM₁₀ in the atmosphere is the result of many dust- and fume-producing industrial and agricultural operations, construction, fugitive sources (such as roadway dust), and atmospheric photochemical reactions involving ROG and NO_x. For carbon monoxide, a product of incomplete combustion, the air in South San Francisco easily meets state and federal standards, however concentrations in the vicinity of congested intersections and highway segments would be expectedly higher than the monitoring data indicates.

Table 3.3-2 identifies the national and state ambient air quality standards for relevant air pollutants along with the ambient pollutant concentrations that have been measured at the Arkansas Street-San Francisco monitoring station through the period of 2002 to 2004.

Traffic-congested roadways and intersections have the potential to generate localized high levels of CO. Localized areas where ambient concentrations exceed national and/or state standards for CO are termed CO “hotspots.” The BAAQMD considers CO as a localized problem requiring additional analysis when a project is likely to subject sensitive receptors to CO hotspots. Land uses such as primary and secondary schools, hospitals, and convalescent homes are considered to be sensitive receptors 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 uses are considered sensitive because people in residential areas are often at home for extended periods of time, so they could be exposed to pollutants for extended periods. Recreational areas are considered moderately sensitive to poor air quality because vigorous exercise associated with recreation places a high demand on the human respiratory function.

The BAAQMD recommends the use of CALINE4, a dispersion model for predicting CO concentrations, as the preferred method of estimating pollutant concentrations at sensitive receptors near congested roadways and intersections. For each receptor analyzed, CALINE4 adds roadway-specific CO emissions calculated from peak-hour traffic volumes to ambient CO air concentrations. For this analysis, localized CO concentrations were calculated using CALINE4 with motor vehicle emission factors updated with the latest version of EMFAC (a program used to calculate motor vehicle pollutant emission rates).

As there are no nearby residential uses that would be affected by an increase in CO at an intersection and the residential live-aboards in the Marina are not in the vicinity of any intersections, receptors included in the project CO analysis include nearby intersections and a hotel at the intersection of Oyster Point Boulevard and Marina Boulevard that would be most affected by traffic generated by the project and cumulative development.

■ Existing Project Site Emissions

The project site is located within the Oyster Point Marina Park (Marina) which is bounded by Marina Boulevard to the south, Oyster Point Boulevard to the west and the San Francisco Bay to the north and east. The project site is on the eastern edge of the greater geographic area east of 101. The area is characterized by commercial and industrial developments. Emissions are generated by stationary and area-wide sources from these land uses, from employees, and from commercial supply vehicles driving to and from these uses.

Table 3.3-2 Summary of Ambient Air Quality in the Project Vicinity

Air Pollutants Monitored at the San Francisco-Arkansas Street Monitoring Station	Year		
	2002	2003	2004
Ozone (O₃)			
Maximum 1-hour concentration measured	0.05 ppm	0.09 ppm	0.09 ppm
Days exceeding national 0.12 ppm 1-hour standard	0	0	0
Days exceeding state 0.09 ppm 1-hour standard	0	0	1
Maximum 8-hour concentration measured	0.05 ppm	0.06 ppm	0.06 ppm
Days exceeding national 0.08 ppm 8-hour standard	0	0	0
Respirable Particulate Matter (PM₁₀)			
Maximum 24-hour concentration measured	60.2 µg/m ³	52 µg/m ³	52 µg/m ³
No. of days exceeding national 150 µg/m ³ 24-hour standard	0	0	0
Days exceeding state 50 µg/m ³ 24-hour standard	2	1	1
Annual arithmetic mean (AAM)	24.7 µg/m ³	22.7 µg/m ³	22.5 µg/m ³
Does measured AAM exceed national 50.0 µg/m ³ AAM standard?	No	No	No
Does measured AAM exceed state 20.0 µg/m ³ AAM standard?	Yes	Yes	Yes
Fine Particulate Matter (PM_{2.5})			
Maximum 24-hour concentration measured	70 µg/m ³	42 µg/m ³	40 µg/m ³
No. of days exceeding national 65 µg/m ³ 24-hour standard	1	0	0
National and state AAM	13.6 µg/m ³	10.1 µg/m ³	9.9 µg/m ³
Does measured AAM exceed national 15.0 µg/m ³ AAM standard?	No	No	No
Does measured AAM exceed state 12.0 µg/m ³ AAM standard?	Yes	No	No
Carbon Monoxide (CO)			
Maximum 8-hour concentration measured	2.6 ppm	2.8 ppm	2.2 ppm
Number of days exceeding national and state 9.0 ppm 8-hour standard	0	0	0
Nitrogen Dioxide (NO₂)			
Maximum 1-hour concentration measured	0.08 ppm	0.07 ppm	0.06 ppm
Days exceeding state 0.25 ppm 1-hour standard	0	0	0
AAM	0.019 ppm	0.018 ppm	0.017 ppm
Does measured AAM exceed national 0.0534 ppm AAM standard?	No	No	No

SOURCE: California Air Resources Board 2005

ppm = parts by volume per million of air.

µg/m³ = micrograms per cubic meter.

3.3.2 REGULATORY FRAMEWORK

Air quality within the Bay Area is addressed through the efforts of various federal, state, regional, and local government agencies. These agencies work jointly, as well as individually, to improve air quality through legislation, regulations, planning, policy-making, education, and a variety of programs. The agencies responsible for improving the air quality within the Bay Area are discussed below.

■ Federal Regulations

The U.S. EPA is responsible for setting and enforcing the federal ambient air quality standards for atmospheric pollutants. It regulates emission sources that are under the exclusive authority of the federal government, such as aircraft, ships, and certain locomotives. The U.S. EPA also has jurisdiction over emissions sources outside state waters (outer continental shelf), and establishes various emissions standards for vehicles sold in states other than California.

The U.S. EPA issued a final rule to reduce emissions from new large marine diesel engines to take place from 2004 through 2007. The program will reduce emissions of NO_x and PM₁₀ generated by marine diesel engines that are larger than 50 horsepower. This rule affects new ferry vessels and vessels with engine replacements after 2004.

As part of its enforcement responsibilities, the U.S. EPA requires each state with nonattainment areas to prepare and submit a State Implementation Plan (SIP) that demonstrates the means to attain the federal standards. The SIP must integrate federal, state, and local plan components and regulations to identify specific measures to reduce pollution, using a combination of performance standards and market-based programs within the timeframe identified in the SIP.

■ State Regulations

The ARB, a part of the California Environmental Protection Agency, is responsible for the coordination and administration of both federal and state air pollution control programs within California. In this capacity, the ARB conducts research, sets California Ambient Air Quality Standards, compiles emission inventories, develops suggested control measures, provides oversight of local programs, and prepares the SIP. The ARB establishes emissions standards for motor vehicles sold in California, consumer products, and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions.

In 1998, following a 10-year scientific assessment process, the ARB identified particulate matter from diesel-fueled engines as a toxic air contaminant. The ARB has since addressed this issue by preparing and approving the *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles* (approved on September 28, 2000). This plan represents the state's comprehensive plan to substantially reduce diesel particulate emissions throughout the state. The plan contains the following three components:

- New regulatory standards for all new on-road, off-road, and stationary diesel-fueled engines and vehicles to reduce diesel PM emissions by about 90 percent overall from current levels
- New retrofit requirements for existing on-road, off-road, and stationary diesel-fueled engines and vehicles where determined to be technically feasible and cost effective
- New phase 2 diesel fuel regulations to reduce the sulfur content levels of diesel fuel to no more than 15 parts per million to provide the quality of diesel fuel needed by the advanced diesel PM emission controls

■ Regional Regulations

The BAAQMD is the primary agency responsible for comprehensive air pollution control in the entire San Francisco Bay Area Air Basin. To that end, the BAAQMD, a regional agency, works directly with the Association of Bay Area Governments, the Metropolitan Transportation Commission, and local governments and cooperates actively with all federal and state government agencies. The BAAQMD develops rules and regulations, establishes permitting requirements for stationary sources, inspects emissions sources, and enforces such measures through educational programs or fines, when necessary.

The BAAQMD is directly responsible for reducing emissions from stationary (area and point), mobile, and indirect sources. It has responded to this requirement by preparing a sequence of Ozone Attainment Plans and Clean Air Plans that comply with the federal *Clean Air Act* and the California *Clean Air Act*, accommodate growth, reduce the pollutant levels in the Bay Area, meet federal and state ambient air quality standards, and minimize the fiscal impact that pollution control measures have on the local economy. The Ozone Attainment Plans are prepared for the federal O₃ standard, and the Clean Air Plans are prepared for the state O₃ standards. The most recent Ozone Attainment Plan was adopted by the BAAQMD Board of Directors on October 2001 and demonstrates attainment of the federal O₃ standard in the Bay Area by 2006. The current regional Clean Air Plan was adopted by the Board of Directors on December 20, 2000. It identifies the control measures that would be implemented through 2006 to reduce major sources of pollutants. These planning efforts have substantially decreased the population's exposure to unhealthy levels of pollutants, even while substantial population growth has occurred within the Bay Area. The Clean Air Plan predicts that regional O₃ concentrations will decrease by 1.2 percent per year or 9.0 percent over the twelve years after it was adopted.

Although no plans are currently required to demonstrate attainment of federal or state particulate matter standards, the Clean Air Plan discusses this pollutant since the health effects of particulates can be serious, and many of the measures identified in the Plan to reduce O₃ precursor emissions will also reduce ambient concentrations of particulate matter.

Although the BAAQMD is responsible for regional air quality planning efforts, it does not have the authority to directly regulate the air quality issues associated with plans and new development projects within the Bay Area. Instead, the BAAQMD has used its expertise and prepared the BAAQMD CEQA Guidelines to indirectly address these issues in accordance with the projections and programs of the Ozone Attainment Plan and Clean Air Plan. The purpose of the BAAQMD CEQA Guidelines is to assist Lead Agencies, as well as consultants, project proponents, and other interested parties, in evaluating potential air quality impacts of projects and plans proposed in the Bay Area. Specifically, the BAAQMD CEQA Guidelines explain the procedures that the BAAQMD recommends be followed during environmental review processes required by CEQA. The BAAQMD CEQA Guidelines provide direction on how to evaluate potential air quality impacts, how to determine whether these impacts are adverse, and how to mitigate these impacts. The BAAQMD intends that by providing this guidance, the air quality impacts of plans and development proposals will be analyzed accurately and consistently throughout the Bay Area, and adverse impacts will be

minimized. It should be noted that the BAAQMD CEQA Guidelines were published in December 1999 after the ARB's identification of diesel engine particulate matter as a toxic air contaminant.

■ Local Regulations

Local jurisdictions, such as the City of South San Francisco, have the authority and responsibility to reduce air pollution through its policy power and decision-making authority. Specifically, the City is responsible for the assessment and mitigation of air emissions resulting from its land use decisions. The City of South San Francisco is also responsible for the implementation of transportation control measures as outlined in the Clean Air Plan. Examples of such measures include bus turnouts, energy-efficient streetlights, and synchronized traffic signals.

City of South San Francisco environmental plans and policies recognize community goals for air quality. Chapter 7.3 of the South San Francisco General Plan identifies goals and policies that help the City contribute to regional air quality improvement efforts. The South San Francisco General Plan is consistent with the Clean Air Plan because of the goals and policies for maintaining and improving air quality as documented in the General Plan Open Space and Conservation Element.

In accordance with CEQA requirements and the CEQA review process, the City assesses the air quality impacts of new development projects, requires mitigation of potentially adverse air quality impacts by conditioning discretionary permits and monitors and enforces the implementation of such mitigation. The City does not, however, have the expertise to develop plans, programs, procedures, and methodologies to ensure that air quality within the City and region will meet federal and state standards. Instead, the City relies on the expertise of the BAAQMD and utilizes the BAAQMD CEQA Guidelines as the guidance document for the environmental review of plans and development proposals within its jurisdiction.

3.3.3 IMPACTS AND MITIGATION MEASURES

■ Methodology

Effects on air quality are evaluated by determining the impacts from both vehicle and ferry emission sources for the project and the no project alternative. The evaluation is based on the calculation of the total emission from all modes of travel (ferry, car, bus) that might be affected by implementation of the project. The different travel modes generate different rates of emissions.

■ Environmental Criteria

Based on environmental criteria developed by the WTA, and in accordance with the requirements of CEQA and NEPA and all applicable state and federal environmental laws, the project would have an adverse effect on the environment if it would do any of the following:

- Result in substantial localized pollutant emissions that would violate federal or California air quality standards or contribute substantially to an existing or projected air quality violation

- Expose sensitive receptors to substantial pollutant concentrations, including the creation of objectionable odors affecting a substantial number of people
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is classified as nonattainment under an applicable federal or California ambient air quality standard
- Result in a probability of contracting cancer exceeding 10-in-1 million for the maximum exposed individual (MEI)
- Result in exposure to non-carcinogenic toxic air contaminants (TACs) that would result in a Hazard Index greater than 1 for the MEI

The thresholds discussed below are currently recommended by the BAAQMD in the *BAAQMD CEQA Guidelines* to determine the significance of air quality impacts.

Construction Period Emissions

Construction-related activities are generally short-term in duration, and the BAAQMD does not recommend any environmental criteria for their associated emissions. Instead, the BAAQMD bases the criteria on a consideration of the control measures to be implemented. If all appropriate emissions control measures recommended by the *BAAQMD CEQA Guidelines* are implemented for a project, then construction emissions are not considered adverse. Currently these control measures only apply to emissions of fugitive dust. Emission controls are not required for the emissions generated by construction vehicle engines.

One of the reasons that construction-level air quality emissions are not compared with a quantified threshold is that the construction industry is an existing source of emissions within the Bay Area, and the entire state. In general, construction equipment operates at one site for a short time, and when finished, moves on to a new construction site. The same situation occurs for the construction employees who make a living going from one site to another doing similar construction work. For those reasons, construction exhaust emissions are included in the regional emission inventory that is the basis for regional air quality plans. Further the *Revised San Francisco Bay Area Ozone Attainment Plan for the 1-Hour National Ozone Standard* (2001) shows construction equipment comprises a good portion of the past, existing, and future (through 2006) emission inventory within the Bay Area. Also, the *Bay Area 2000 Clean Air Plan* states that PM₁₀ emissions from “other sources” include construction operations for the past, present, and future (2006) emissions inventory. These are the reasons that the BAAQMD does not expect these emissions to impede attainment or maintenance of O₃ or CO standards in the Bay Area.

Operational Emissions—Daily Emissions of ROG, NO_x and PM₁₀

The BAAQMD currently recommends that projects with operational motor vehicle emissions that exceed any of the following thresholds be considered adverse. These thresholds apply to the operational motor vehicle emissions associated with individual projects only; they do not apply to construction-related emissions. The operational emissions that are generated by individual projects and exceed these thresholds are also considered to be cumulatively considerable by the BAAQMD:

- 80.0 pounds per day (ppd) of ROG

- 80.0 ppd of NO_x
- 80.0 ppd of PM₁₀

Adverse effects of operation on air quality for this project are evaluated by comparing total emissions for the project and the no project alternative. The evaluation is based on the calculation of the total emission from all modes of travel (ferry, car, bus) that might be affected by implementation of the project. The different modes of travel generate different rates of emissions. A project alternative would be considered to have an adverse impact if it resulted in an increase over the no project alternative greater than the thresholds established above.

■ Impacts and Mitigation Measures Incorporated from 2003 WTA PEIR

The 2003 WTA PEIR (URS, 2003) included many impacts and mitigation measures that are either addressed in this document or are not applicable to this project. A table of impacts and mitigation measures from the PEIR is included as Appendix H of this document and includes a column showing how the PEIR impacts and MMs are applied to this project (i.e., *IR*—Incorporated by Reference, *AD*—Addressed in EIR, and *NA*—Not Applicable). For air quality, the following impacts and mitigation measures from the PEIR would apply to the project and are assumed to be incorporated in this project by reference.

- **Impacts:** A-2, A-3, A-4, A-5, A-6
- **MMs:** A-2.1, A-4.1, A-5.1, A-5.2, A-6.1, A-6.2

■ Impacts and Mitigation

Threshold	Would the project result in substantial localized pollutant emissions that would violate federal or California air quality standards or contribute substantially to an existing or projected air quality violation?
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Impact 3.3-1 Construction-related activities associated with the project would result in emissions of fugitive dust, ROG, NO_x, CO, SO₂, and PM₁₀.

As discussed in the 2003 WTA PEIR and noted above, construction-related activities are generally short-term in duration and the BAAQMD bases the determination of significance on a consideration of the control measures to be implemented. If all appropriate emissions control measures recommended in the 2003 WTA PEIR are implemented for the project, then construction emissions are considered to be minimal.

CEQA Conclusion: The potentially significant impact on federal or California air quality standards and on existing or projected air quality violations would be reduced to less than significant with implementation of mitigation measures A-5.1 and A-5.2 from the 2003 WTA PEIR. The hours during which construction activities and haul trips would be conducted would be limited to the hours of 8:00 A.M. and 8:00 P.M. on weekdays, 9:00 A.M. and 8:00 P.M. on Saturdays, and 10:00 A.M. and 6:00 P.M. on Sundays and holidays, in compliance with the City of South San Francisco Noise Ordinance, and would reduce the risk of exposure of

communities to diesel particulates. In addition, the following mitigation will be implemented as part of the proposed project.

MM 3.3-1(a) The project developer shall require by contract specification that no more than 2 pieces of equipment shall be operated simultaneously within 1000 feet of sensitive receptors.

MM 3.3-1(b) The project developer shall require by contract specification that construction equipment be retrofitted with diesel particulate filters or diesel oxidation catalysts where suitable.

Implementation of these mitigation measures would ensure that this impact remains less than significant.

Threshold	Would the project expose sensitive receptors to substantial pollutant concentrations?
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Impact 3.3-2 Implementation of the project would not expose sensitive receptors to CO concentrations in excess of the federal or state ambient air quality standards.

Localized CO concentration impacts associated with the project have been evaluated using the CALINE4 model to determine existing and future CO concentrations at study area intersections and at the Inn at Oyster Point, which is the nearest sensitive receptor to the access road. As the residential live-aboards are greater than 100 feet from the nearest intersection, increases in localized CO emissions at impacted intersections would be minimal at this distance.

The impacts have been evaluated in the context of the project with the addition of traffic associated with cumulative development in the area surrounding the proposed ferry terminal. The project was evaluated using the projected traffic from South San Francisco/East Bay ferry service. This analysis is conservative, in that it adds the maximum project-related CO emissions to the higher future levels of CO at the analyzed intersections.

The results of these calculations are shown in Table 3.3-3 for the existing 2005 CO concentrations and after project completion in 2025. Future CO concentrations at the study intersections and at the nearby receptors would not exceed the national and state 1-hour and 8-hour ambient air quality standards for CO. Therefore, implementation of the project would not expose sensitive receptors located close to these intersections or at the Inn at Oyster Point.

As identified in the 2003 WTA PEIR, motor vehicles leaving the ferry terminals in the evening would produce cold-start emissions that could lead to localized violations of the CO standards. The project would be primarily a destination terminal and would not have a substantial amount of cars leaving in the evening hours. The project would not increase parking spaces at the Marina but would include striping of 56 spaces in an existing Marina parking area. The ridership model forecasts for the South San Francisco terminal indicate that the ridership from South San Francisco to the East Bay in the morning commute would result in a reduction of 20 vehicle trips for the reverse commute (Wilbur Smith Associates 2005). The projected 20

vehicles would likely park in the improved parking area at the Marina and would use only a portion of the available parking spaces. Assuming a worst-case scenario with a full parking lot and an additional 56 vehicles at the terminal, the cold-start emissions would not likely result in a violation of the CO standards.

Table 3.3-3 WTA SSF Ferry Terminal, Carbon Monoxide Concentrations at Selected Locations

Roadway Intersection	Receptor Location	One-Hour Average CO (ppm)			Eight-Hour Average CO (ppm)		
		Existing	Future Baseline (2025)	Future w/ Project (2025)	Existing	Future Baseline (2025)	Future w/ Project (2025)
Oyster Point Boulevard and Gull Road	25 feet from intersection	6.9	4.0	4.0	4.6	3.0	3.0
Oyster Point Boulevard at Marina Boulevard	25 feet from intersection	5.0	3.5	3.5	3.5	2.5	2.5
Oyster Point Boulevard at Marina Boulevard	Inn at Oyster Point 100 feet from intersection	4.6	3.4	3.4	3.3	2.5	2.5

SOURCE: EIP Associates, 2005

There are no violations of ambient CO standards above.

CO Background:

One-Hour Average: existing: 3.3 ppm; future: 3.1 ppm

Eight-Hour Average: existing: 2.5 ppm; future: 2.3 ppm

Ambient CO Standards:

One-Hour Average: federal: 35 ppm; state 20 ppm

Eight-Hour Average: federal and state: 9 ppm

There would not be an increase in the number of cold-start emissions from the ferry riders that would travel from the East Bay as the emissions would have been present with or without the project. The emissions would instead be transferred from the various South San Francisco destinations and concentrated in the East Bay parking lots. The addition of 265 cars to the East Bay parking facilities would contribute to the existing cold-start emissions at the facilities in the evening hours. As the projected parking demand for riders in the East Bay would be accommodated by existing parking spaces, the addition of cold-start emissions at the East Bay facilities due to the project would be minimal and would have been previously accounted for at those lots.

CEQA Conclusion: The impact of exposing sensitive receptors to CO concentrations in excess of the federal or state ambient air quality standards is considered less than significant. No mitigation would be required.

Impact 3.3-3 Implementation of the project would not cause a substantial health risk to nearby receptors from exposure to diesel particulate matter.

Diesel particulate emissions, a known toxic air contaminant, would occur from ferry boat docking and idling at the terminal. To address diesel particulate and other TAC emissions, the ARB has recently finalized an *Air Quality and Land Use Handbook: A Community Health Perspective* (April 2005) as an “informational guide” to prioritize the important sources of TACs and reduce exposures to proximate populations. Among the important sources of diesel particulate emissions it identifies are port facilities that include five source categories that produce diesel emissions. These are ocean-going vessels, harbor craft, cargo handling

equipment, railroad locomotives, and heavy-duty trucks. A ferry terminal is not considered to be a major source of diesel emissions according to the level of major source emissions identified in the ARB handbook. The proposed ferry terminal would have only one source of diesel emissions in the ferry boats and since it is not a shipping terminal would not include other modes of travel from the terminal such as heavy-duty trucks and railroad locomotives. However, unlike port facilities, the ferry terminal would be situated with sensitive receptors at the residential live-aboards in the Oyster Point Marina Park (Marina) that would be directly adjacent to the incoming/outgoing ferries and during the idling phase.

As mentioned above, the U.S. EPA is working to reduce emissions from new large marine diesel engines. Included in this is a reduction of PM₁₀ emissions, which includes diesel particulate emissions. The proposed ferry boats associated with the project would be in compliance with these new U.S. EPA standards for emissions. The project also includes control devices such as selective catalytic reduction (SCR) and particulate traps which would further reduce the levels of NO_x and PM₁₀. The estimated reduction would be 85% below the new U.S. EPA standards.

A Human Health Risk Assessment (HHRA) was conducted by ENVIRON Corporation for the proposed South San Francisco ferry terminal and is included in Appendix D of this document. The HHRA examined the risks of diesel particulate matter emissions to nearby receptors including the residential live-aboard boats, land-based residents to the west of US101, marina workers and land-based workers outside the marina. Results of the HHRA indicate that the estimated incremental cancer risk for land-based receptors is approximately 3×10^{-6} for workers and 2×10^{-7} for residents, based on a 70-year lifetime and high-end exposure assumptions. For marina receptors the estimated incremental cancer risk is approximately 3×10^{-6} for workers and 1×10^{-5} for residents, based on a 70-year lifetime and high-end exposure assumptions. As discussed in this report, even with these conservative assumptions, all estimated incremental cancer risks are within the National Contingency Plan (40 CFR 300) target risk range (1×10^{-4} to 1×10^{-6}) and at or below the risk level (1×10^{-5}) listed by California *Safe Drinking Water and Toxic Enforcement Act* (“Proposition 65”) and the BAAQMD CEQA Guidelines.

Even though the live-aboard boats showed the greatest exposure risk to the proposed ferry emissions due to the proximity of the ferry boats, the health risk associated with exposure would be below federal and state risk standards. The risk assessment included the emission reduction actions proposed by the project for PM₁₀ emissions which reduced the exposure of sensitive receptors by 85 percent of the federal emissions standard.

CEQA Conclusion: The impact of pollutants from the project on sensitive receptors would be less than significant as it would not exceed risk standards for residential or worker receptors. No mitigation would be required.

Threshold	Would the project create objectionable odors affecting a substantial number of people?
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Impact 3.3-4 Implementation of the project would not create objectionable odors affecting a substantial number of people.

The occurrence and severity of potential odor impacts depends on numerous factors. The nature, frequency, and intensity of the source, the wind speeds and direction, and the sensitivity of the receiving location each contribute to the intensity of the impact. While offensive odors rarely cause any physical harm, they can be unpleasant and cause distress among the public and generate citizen complaints.

Construction activities occurring in association with the proposed ferry terminal building and dredging operations would generate airborne odors associated with the operation of construction vehicles (e.g., diesel exhaust) and the application of architectural coatings (e.g., paint). These emissions would occur during daytime hours only and would be isolated to the immediate vicinity of the construction site and activity. As such, they would not affect a substantial number of people.

The project would include potential operational airborne odors associated with the operation of the ferry boats and diesel exhaust. The proposed emission control devices such as the SCR and particulate traps that are included in the project to reduce emissions would reduce the odor emissions associated with the hydrocarbon and diesel particulates emitted from the vessels. These odors would be confined to the immediate vicinity of the ferries and would be limited to when the ferry is present and operating.

CEQA Conclusion: The creation of objectionable odors is considered less than significant as it would not create objectionable odors affecting significant numbers of people. No mitigation would be required.

Threshold	Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is classified as nonattainment under an applicable federal or California ambient air quality standard?
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Impact 3.3-5 Implementation of the project would not result in a cumulatively considerable net increase of any criteria pollutant compared to the no project alternative.

Implementation of the South San Francisco Ferry Terminal would result in a reduction of vehicle trips across the Bay Area bridges. Primary users of a transbay ferry originating in the Harbor Bay area would most likely be residents of Alameda and Contra Costa Counties that commute for work to the South San Francisco area. As Genentech is one of the largest employers in the South San Francisco area near the terminal, a sample of commute distances for East Bay residents (Alameda and Contra Costa County residents) who work for Genentech was used to determine commute percentages by East Bay city. The average commute distance for East Bay residents to South San Francisco would be 28.8 miles each way.

As determined by the traffic study prepared by Wilbur Smith Associates for the South San Francisco terminal, the projected ridership demand would result in the reduction of 265 cars from the Bay Area bridges. If the 265 cars were driven to the Oakland ferry terminal in Jack London Square, then the average commute distance would be 14.3 miles each way. Using the commute pattern for East Bay residents, vehicle emissions were calculated using the URBEMIS 2002 (Version 8.7) computer model recommended by the BAAQMD. The results from the vehicle emissions are shown in Table 3.3-4.

Air emissions from implementation of the project would include ferry boat and vehicle emissions. The ferry emissions of the project would be reduced by 85% of the EPA Tier II standards for new ferries. The ferries would also only be in operation during the weekday morning and evening commute periods.

Table 3.3-4 WTA SSF Ferry Terminal, Regional Air Emissions, Project vs. No Project (ppd)			
<i>Pollutant</i>	<i>Project^a</i>	<i>No Project^b</i>	<i>Increase</i>
ROG	13.38	13.12	0.26
NO _x	22.75	9.28	13.47
CO	92.82	153.94	-61.12
SO ₂	7.86	0.13	7.73
PM ₁₀	10.05	20.21	-10.16

SOURCE: EIP Associates 2005

^a Project Emissions = Ferry Emissions + Vehicle Emissions traveling from East Bay Locations to East Bay Ferry Terminal

^b No Project Emissions = Vehicle Emissions traveling from East Bay to South San Francisco

The project would result in an increase of emissions of ozone precursors, ROG and NO_x, and would contribute to the Bay Area violations of state ambient ozone standards. The increase would however be less than the BAAQMD threshold of 80 ppd for ROG and NO_x. The project would also result in an increase of SO₂ and a decrease of CO and PM₁₀.

CEQA Conclusion: The increases in emissions would not exceed the established thresholds making the impact less than significant. No mitigation would be required.

3.3.4 REFERENCES

Bay Area Air Quality Management District (BAAQMD). 1996. *BAAQMD CEQA Guidelines: Assessing the Air Quality Impacts of Projects and Plans*, April. Revised December 1999.

———. n.d. *Climate, Physiography, and Air Pollution Potential—Bay Area and its Subregions (Referenced by County)*. Website source: http://www.baaqmd.gov/dst/papers/bay_area_climate.pdf.

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

ENVIRON Corporation. 2005. *Human Health Risk Assessment for Proposed South San Francisco WTA Ferry Terminal, South San Francisco, California*, May.

URS Corporation. 2003. *Final Program Environmental Impact Report Expansion of Ferry Transit Service in the San Francisco Bay Area*, June.

Wilbur Smith Associates. 2005. *Oyster Point Ferry Terminal Transportation Report*, 27 May.