

3.2 Air Quality

3.2.1 Introduction

This section presents the regulatory setting, environmental setting, and potential impacts of the Proposed Project related to air quality.

Data sources used in the preparation of this section include state and federal regulations and reference materials from the Bay Area Air Quality Management District (BAAQMD).

Specific to this section is the term “sensitive receptors,” meaning those who are particularly susceptible to the adverse effects of air pollution. These include children, the elderly, and people with illnesses. Examples include schools, nursing homes, hospitals, and residential areas. Air pollution can cause adverse health effects in humans, including aggravating asthma conditions and other respiratory problems (BAAQMD 2010). Sensitive receptors adjacent to stream reaches in the Project Area are numerous, and include people in residential areas, schools, elder care facilities, and hospitals.

3.2.2 Regulatory Setting

Federal Plans, Policies, Regulations, and Laws

Clean Air Act

The U.S. Environmental Protection Agency (USEPA) carries out the provisions of the Clean Air Act (CAA), originally passed in 1963 and amended six times, most recently in 1990. USEPA implements programs under the CAA that focus on reducing ambient air pollutant concentrations, reducing emissions of toxic pollutants, and phasing out production and use of chemicals that destroy stratospheric ozone. USEPA sets ambient air limits, the National Ambient Air Quality Standards (NAAQS) for six criteria pollutants: particulate matter, carbon monoxide, nitrogen oxides, sulfur oxides, ground-level ozone, and lead. The NAAQS are presented in Table 3.2-1. Primary standards are set for protection of human health and secondary standards are set for environmental protection. Areas which meet the primary standards are considered in “attainment” while areas with air quality not meeting the primary standards are in “non-attainment.”

Of the six criteria pollutants, particulate matter and ground-level ozone pose the most widespread threat to human health. Particle pollution poses the greatest threat to sensitive receptors including children, the elderly, and asthmatics, as it impairs lung function. Particle pollution includes very fine soot and dust. Sources of particulate matter include: ground-disturbing activities (such as construction grading and excavation); motor vehicles; power generation activities; industrial operations; burning of fuels (such as wood, oil, and coal); dust from unpaved roads; and crushing and grinding operations. Particle pollution can be carried by the wind and impair air quality far from its source. To reduce particle levels, USEPA regulates emissions from motor vehicles and point sources.

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Table 3.2-1. State and Federal Ambient Air Quality Standards

Contaminant	Averaging Time	State Standards ^{1,3}	Primary Federal Standards ^{2,3,5}	Secondary Federal Standards ^{2,3,6}
Ozone	1-hour	0.09 ppm (180 µg/m ³)	-	-
	8-hour	0.070 ppm (137 µg/m ³ , see note 4)	0.075 ppm (147 µg/m ³)	Same as primary standard
Respirable Particulate Matter (PM ₁₀)	24-hour	50 µg/m ³	150 µg/m ³	Same as primary standard
	Annual arithmetic mean	20 µg/m ³	-	-
Fine Particulate Matter (PM _{2.5})	24-hour	-	35 µg/m ³	Same as primary standard
	Annual arithmetic mean	12 µg/m ³	15 µg/m ³	Same as primary standard
Carbon Monoxide	8-hour	9.0 ppm	9 ppm (10 mg/m ³)	None
	1-hour	20 ppm	35 ppm (40 mg/m ³)	None
Nitrogen dioxide	Annual arithmetic mean	0.030 ppm (57 µg/m ³)	0.053 ppm (100 µg/m ³) ⁸	Same as primary standard
	1-hour	0.18 ppm (339 µg/m ³)	0.100 ppm (188 µg/m ³) ⁸	
Sulfur dioxide	24-hour	0.04 ppm (105 µg/m ³)	0.14 ppm (365 µg/m ³)	-
	3-hour	-	-	0.5 ppm (1,300 µg/m ³) ⁹
	1-hour	0.25 ppm (655 µg/m ³)	75 ppb (196 µg/m ³) ⁹	-
Lead ¹⁰	30-day average	1.5 µg/m ³	-	-
	Calendar quarter	-	1.5 µg/m ³	Same as primary standard
	Rolling 3-month average ¹¹	-	0.15 µg/m ³	Same as primary standard
Visibility reducing particles	8-hour	See note 7	-	-
Sulfates	24-hour	25 µg/m ³	-	-
Hydrogen Sulfide	1-hour	0.03 ppm (42 µg/m ³)	-	-
Vinyl Chloride ¹⁰	24-hour	0.01 ppm (26 µg/m ³)	-	-

ppm – parts per million by volume

µg/m³ – micrograms per cubic meterPM₁₀ – particulate matter less than 10 microns in diameterPM_{2.5} – particulate matter less than 2.5 microns in diameter

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Table 3.2-1. State and Federal Ambient Air Quality Standards

Notes:

1. California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, suspended particulate matter—PM10, PM2.5, and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
2. National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest eight hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu\text{g}/\text{m}^3$ is equal to or less than one. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact U.S. EPA for further clarification and current federal policies.
3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. Any equivalent procedure which can be shown to the satisfaction of the California Air Resources Board (CARB) to give equivalent results at or near the level of the air quality standard may be used.
5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
7. Extinction coefficient of 0.23 per kilometer—visibility of ten miles or more (0.07—30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape.
8. To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 0.100 ppm (effective January 22, 2010). Note that the USEPA standards are in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national standards to the California standards the units can be converted from ppb to ppm. In this case, the national standards of 53 ppb and 100 ppb are identical to 0.053 ppm and 0.100 ppm, respectively.
9. On June 2, 2010, USEPA established a new 1-hour SO₂ standard, effective August 23, 2010, which is based on the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations. USEPA also proposed a new automated Federal Reference Method (FRM) using ultraviolet technology, but will retain the older pararosaniline methods until the new FRM have adequately permeated state monitoring networks. USEPA also revoked both the existing 24-hour SO₂ standard of 0.14 ppm and the annual primary SO₂ standard of 0.030 ppm, effective August 23, 2010. The secondary SO₂ standard was not revised at that time; however, the secondary standard is undergoing a separate review by USEPA. Note that the new standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the new primary national standard to the California standard, the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.
10. CARB has identified lead and vinyl chloride as “toxic air contaminants” with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
11. National lead standard, rolling 3-month average: final rule signed October 15, 2008.

Source: CARB 2010

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Ground-level ozone is the primary component of smog. Ozone is formed from the interaction of reactive organic gases (ROG) and nitrogen oxides (NO_x). ROG is emitted by motor vehicles, industrial activities, and consumer products (such as paints, inks, and adhesives). NO_x is formed during the burning of fossil fuels such as gasoline, diesel fuel, coal, and oil. Weather and topography influence the formation and location of ground-level ozone. Hot temperatures spur the reaction between volatile organic compounds and nitrogen oxides to form ozone. Ground-level ozone settles into valleys when winds are calm and temperatures are warm. Sensitive receptors to ozone are the same as those listed for particulate matter, with the addition of forests and agricultural crops.

State Plans, Policies, Regulations, and Laws

California Air Resources Board

The California Air Resources Board (CARB) was established in 1967. CARB has set California Ambient Air Quality Standards (CAAQs), presented in Table 3.2-1, that are more stringent than the NAAQS for most contaminants. These include standards for additional contaminants not covered in the NAAQS, including visibility reducing particles, sulfates, hydrogen sulfide, and vinyl chloride. The California Clean Air Act was passed in 1988 and requires non-attainment areas to achieve and maintain the CAAQs by the earliest time practicable, and local air districts to develop attainment plans for state standards.

CARB regulates motor vehicle emissions in the state, while local air quality management district's permit stationary sources.

Regional and Local Plans, Policies, Regulations, and Ordinances

CARB has designated 15 air basins in the state. Thirty-five local air quality management districts are responsible for attainment and permitting in each basin and subbasin area. Santa Clara County is located in the San Francisco Bay Area Air Basin. The BAAQMD oversees planning and permitting in the nine-county Bay Area, including Santa Clara County.

BAAQMD 2010 Clean Air Plan/BAAQMD CEQA Guidelines

The BAAQMD adopted a new clean air plan (the Bay Area 2010 Clean Air Plan) in September 2010. The purposes of the Bay Area 2010 Clean Air Plan are 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; provide a control strategy to reduce ozone, particulate matter (PM), and air toxics 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 2010).

The BAAQMD published its latest version of the State CEQA Guidelines in May 2011, to aid assessment of air quality impacts. The guidelines address evaluation of air quality impacts and their significance, and development of mitigation measures for significant impacts. The guidelines focus on criteria air pollutant, toxic air contaminant, and odor emissions generated from projects.

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3.2.3 Environmental Setting

Climate and Topography

Climate and topography dictate the potential for air pollution to build up or concentrate in geographic areas. Wind speed, inversions, atmospheric stability, solar radiation, and terrain all influence air pollution potential. The actual air quality is a function of the air pollution potential and the existing emissions at any given time.

Wind speed affects air quality because faster winds carry pollutants away from the source. Low wind speeds allow more pollutants to be emitted into the air mass per unit of time, leading to a buildup of pollutant concentration. Similarly, inversions influence the mass of air available for dilution by vertically limiting the distance pollutants can travel. An inversion occurs when the typical atmospheric condition of “temperature decreases with elevation increases” is reversed, or “inversed.” Inversions may result in a layer of warmer air resting over a layer of cooler air. The denser cooler air is trapped below the less dense warm air. In this inversion situation, pollutants emitted are trapped beneath the warmer air aloft within the cooler air lower to the ground. This situation, in combination with reduced circulation, reduces opportunities for mixing and dispersion, potentially leading to higher pollutant concentrations and poorer air quality. Inversions in the Bay Area may limit the pollutant mixing depth of the lower air mass to as little as 50 to 100 meters above the ground surface. In the Bay Area, inversions can occur in the winter under conditions of cold, clear nights, with damp ground and little wind. Inversions also happen under warmer weather conditions when the fog systems keep ground temperatures cooler than the air above them. (BAAQMD 2011)

Atmospheric stability also influences the ability of pollutants to move vertically. Stability is defined as the atmosphere’s resistance to vertical motions (BAAQMD 2011). The more stable the air, the slower the mixing of pollutants into the air mass. Stability is dependent on the temperature gradient with elevation. A stronger standard temperature gradient (with temperatures decreasing with elevation increases) increases atmospheric instability and mixing. Atmospheric stability can cause reduced pollutant mixing and, therefore, increased air pollution potential.

Solar radiation is necessary for formation of ozone in the atmosphere. Ultraviolet sunlight and warm temperatures catalyze the chemical reaction between reactive organic gases and nitrogen oxides that form ozone. The frequent hot, sunny days in the Bay Area in the summer months promote ozone air pollution, particularly in the inland valleys where temperatures are warmest. Insufficient ultraviolet light and warmth in the winter reduce the likelihood of forming ozone. (BAAQMD 2011)

Topography influences air pollution principally through wind and circulation patterns. The lee side of mountains may be sheltered from the predominant winds, reducing turbulence and downward transport. Elevated terrains can create temperature and density driven circulations, with up-valley wind flows during daytime heating and down-valley flows during nighttime cooling (BAAQMD 2011). In the Bay Area, typical on-shore regional wind patterns from the west and northwest can be reversed by seasonal off-shore flows,

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generating northeasterly and easterly winds. Winter cyclonic storms may bring southerly winds.

San Francisco Bay Air Subbasins

The BAAQMD divides the San Francisco Bay Area Air Basin into subbasins with distinct climate and topography. Two air subbasins occupy Santa Clara County—the Peninsula and the Santa Clara Valley subbasins. The peninsula region of the Bay Area extends from the area northwest of San Jose to the Golden Gate, with the Santa Cruz Mountains extending up the center of the peninsula and terminating in South San Francisco. Small coastal towns on the west side of the mountains experience a high incidence of cool, foggy weather in the summer resulting from coastal ocean upwelling and northwest winds. Larger cities in the southeastern area of the peninsula, on the east side of the mountain range, experience warmer temperatures and few foggy days because the marine layer is blocked by the mountains to the west. Annual average wind speeds range from 5 to 10 miles per hour throughout the peninsula. On the east side of the mountains, the winds are generally in a westerly pattern, although the wind patterns are influenced by local topographic features. The blocking effect of the Santa Cruz Mountains results in higher temperatures in the eastern areas, with summertime maximum temperatures at Redwood City, representing the eastern peninsula, in the low 80s. The average minimum temperature in Redwood City is 40°F in the winter and 52–54°F in the summer. Air pollution potential is highest along the southeastern portion of the peninsula because this area is most protected from the high winds and fog of the marine layer, the emission density is relatively high, and pollutant transport from upwind sites is possible. (BAAQMD 2009b)

The Santa Clara Valley subregion is bounded by the Santa Cruz Mountains to the west, the Diablo Range to the east, the San Francisco Bay to the north, and the convergence of the Gabilan Range and the Diablo Range to the south. The terrain of the Santa Clara Valley greatly influences the wind patterns and results in a prevailing flow roughly parallel to the Valley's northwest-southeast axis, with a north-northwesterly sea breeze extending up the valley during the afternoon and early evening and a light south-southeasterly drainage flow occurring during the late evening and early morning. Speeds are greatest in the spring and summer. The strongest winds generally occur during summer afternoon and evenings, although strong winds typically only occur during winter storms. In the summer, temperatures are warm during the day, with mostly cool nights. Near the San Jose airport, mean maximum temperatures range from the high 70s to the low 80s in the summer, and from the high 50s to the low 60s during the winter. Mean minimum temperatures are in the low 40s during the winter and in the high 50s during the summer. Further inland areas to the south may have greater temperature extremes because the moderating effect of the Bay is not as strong. Santa Clara Valley has a high air pollution potential because of the valley's large population; the transport of photochemical precursors from surrounding counties to the valley area; and the concentration of pollutants that occurs in the valley from the bordering mountains, winter inversions, and low-inversion summer days. (BAAQMD 2009b)

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Air Quality Attainment Status

Air quality is a function of the climate, topography, and emissions in any area or upwind of that area. Table 3.2-2 presents the attainment status of the state and federal standards in the Bay Area. The San Francisco Bay Area Air Basin (SFBAAB), including Santa Clara County, is in attainment for carbon monoxide, nitrogen dioxide, sulfur dioxide, and lead pollutant standards. However, the SFBAAB is in non-attainment for the ozone and particulate matter national and state standards. In 2005, the BAAQMD completed an ozone strategy to implement all feasible measures to reduce ozone. This strategy was updated by the requirements of the 2010 Clean Air Plan to provide a control strategy to reduce particulate matter. (BAAQMD 2010)

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Table 3.2-2. Bay Area Attainment Status of the State and Federal Ambient Air Quality Standards

Contaminant	Averaging Time	State Standards Attainment Status ¹	Federal Standards Attainment Status ²
Ozone	1-hour	N	See note 4
	8-hour	N ⁷	N ³
Respirable Particulate Matter (PM ₁₀)	24-hour	N	U
	Annual arithmetic mean	N ⁶	
Fine Particulate Matter (PM _{2.5})	24-hour		N
	Annual arithmetic mean	N ⁶	A
Carbon Monoxide	8-hour	A	A ⁵
	1-hour	A	A
Nitrogen Dioxide	Annual arithmetic mean		A
	1-hour	A	U
Sulfur Dioxide	24-hour	A	A
	1-hour	A	
Lead	30-day average	A	
	Calendar quarter		A
Visibility Reducing Particles	8-hour	U	
Sulfates	24-hour	A	
Hydrogen Sulfide	1-hour	U	
Vinyl Chloride	24-hour	Not available	

A - attainment

N - non-attainment

U - unclassified

Notes:

- California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, suspended particulate matter—PM₁₀, and visibility reducing particles are values that are not to be exceeded. The standards for sulfates, Lake Tahoe carbon monoxide, lead, hydrogen sulfide, and vinyl chloride are not to be equaled or exceeded. If the standard is for a 1-hour, 8-hour, or 24-hour average (i.e., all standards except for lead and the PM₁₀ annual standard), then some measurements may be excluded. In particular, measurements are excluded that CARB determines would occur less than once per year on the average. The Lake Tahoe CO standard is 6.0 ppm, a level one-half the national standard and two-thirds the state standard.
- National standards shown are the "primary standards" designed to protect public health. National standards other than for ozone, particulates and those based on annual averages are not to be exceeded more than once a year. The 1-hour ozone standard is attained if, during the most recent 3-year period, the average number of days per year with maximum hourly concentrations above the standard is equal to or less than one. The 8-hour ozone standard is attained when the 3-year average of the 4th highest daily concentrations is 0.075 ppm (75 ppb) or less. The 24-hour PM₁₀ standard is attained when the 3-year average of the 99th percentile of monitored concentrations is less than 150 µg/m³. The 24-hour PM_{2.5} standard is attained when the 3-year average of 98th percentiles is less than 35 µg/m³. Except for the national particulate standards, annual standards are met if the annual average falls below the standard at every site. The national annual particulate standard for PM₁₀ is met if the 3-year average falls below the standard at every site. The annual PM_{2.5} standard is met if the 3-year average of annual averages spatially-averaged across officially designed clusters of sites falls below the standard.
- In June 2004, the Bay Area was designated as a marginal non-attainment area of the national 8-hour ozone standard. USEPA lowered the national 8-hour ozone standard from 0.80 to 0.75 PPM (i.e., 75 ppb) effective May 27, 2008. USEPA will issue final designations based upon the new 0.75 ppm ozone standard by July 31, 2011.
- The national 1-hour ozone standard was revoked by USEPA on June 15, 2005.
- In April 1998, the Bay Area was redesignated to attainment for the national 8-hour carbon monoxide standard.
- In June 2002, CARB established new annual standards for PM_{2.5} and PM₁₀.
- The 8-hour California ozone standard was approved by CARB on April 28, 2005, and became effective May 17, 2006.

Source: BAAQMD 2009a

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3.2.4 Impact Analysis

Methodology

Although existing SMP and proposed maintenance activities are and would be widespread, transitory, and short-term in nature, similar to construction activities, they serve and would continue to serve the purpose of maintaining existing features rather than constructing new features. Based on discussions with the BAAQMD, the BAAQMD's operational CEQA thresholds for projects are most appropriate for the Proposed Project (Michael, pers. comm., 2010).

Air emissions from proposed maintenance activities were estimated for three sources: off-road vehicles, on-road vehicles, and pesticide use. Off-road vehicle emissions were estimated using equipment data and CARB's OFFROAD 2007 model. On-road vehicle emissions were estimated using vehicle miles traveled (see Section 3.12, *Traffic and Transportation*) and CARB's Emissions Factors 2007 model. Pesticide use was based on a 4-year average (2007–2010) of SCVWD's pesticide use and the percentage of ROG in each pesticide, as identified in the California Department of Pesticide Regulation's Pesticide Volatile Organic Compound Emission Inventory. For a list of the type and quantity of pesticides used under the existing SMP, refer to Tables 3.6-1 and 3.6-2 in Section 3.6, *Hazards and Hazardous Materials*.

Criteria for Determining Significance

For the purposes of this analysis, the Proposed Project would result in a significant impact on air quality if it would:

- A. conflict with or obstruct implementation of applicable air quality plans;
- B. exceed any air quality standard by failing to adhere to assumptions used in the preparation of any Air Quality Plans;
- C. result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);
- D. expose sensitive receptors to substantial pollutant concentrations; or
- E. create objectionable odors affecting a substantial number of people.

Table 3.2-3 provides the BAAQMD's recommended significance criteria for analysis of air quality impacts. Based on discussions with the BAAQMD, the BAAQMD's operational CEQA thresholds for projects are most appropriate for the Proposed Project (Michael, pers. comm., 2010).

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Emissions associated with the Proposed Project were estimated for the various SMP activities as a whole; for this reason, the impact discussion in this section relative to Significance Criteria A through D is not broken down by the individual categories of maintenance activities.

Table 3.2-3. BAAQMD CEQA Thresholds of Significance for Criteria Air Pollutants

Criteria Air Pollutants and Precursors (Regional)	Operational Thresholds	
	Average Daily Emissions (lb/day)	Maximum Annual Emissions (tpy)
Reactive Organic Gases (ROG)	54	10
Nitrogen oxides (NOx)	54	10
Particulate Matter (PM ₁₀)	82	15
Particulate Matter (PM _{2.5})	54	10
PM ₁₀ /PM _{2.5} (fugitive dust)	None	
Local Carbon Monoxide (CO)	9.0 ppm (8-hour average), 20.0 ppm (1-hour average)	
Risk and Hazards for new sources and receptors (Individual Project) Note: <i>Threshold for new receptors is effective May 1, 2011.</i>	Compliance with Qualified Community Risk Reduction Plan OR <ul style="list-style-type: none"> • Increased cancer risk of >10.0 in a million • Increased non-cancer risk of > 1.0 Hazard Index (Chronic or Acute) • Ambient PM_{2.5} increase: > 0.3 µg/m³ annual average <u>Zone of Influence:</u> 1,000-foot radius from property line of source or receptor	
Risk and Hazards for new sources and receptors (Cumulative Threshold). Note: <i>Threshold for new receptors is effective May 1, 2011.</i>	Compliance with Qualified Community Risk Reduction Plan OR <ul style="list-style-type: none"> • Cancer risk: >100 million (from all local sources) • Non-cancer risk: > 10.0 Hazard Index (from all local sources, Chronic) • Ambient PM_{2.5}: > 0.8 µg/m³ annual average (from all local sources) <u>Zone of Influence:</u> 1,000-foot radius from property line of source or receptor	
Accidental Release of Acutely Hazardous Air Pollutants	Storage or use of acutely hazardous materials located near receptors or new receptors located near stored or used acutely hazardous materials considered significant	
Odors	Five confirmed complaints per year averaged over 3 years	

tpy – tons per year; lb/day – pounds per day; ppm – parts per million

Source: BAAQMD 2011

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Environmental Impacts**Impact AIR-1: Temporary Increase in ROG, NO_x, PM₁₀, and PM_{2.5} Emissions during Maintenance Activities (Significance Criteria A, B, C, D; Less than Significant with Mitigation or Significant and Unavoidable)**

Conducting the Proposed Project maintenance activities would generate emissions of criteria air pollutants. In particular, soil disturbance would cause temporary emissions of particulate matter. Fuel combustion involved with operating heavy equipment and on-road vehicles used to dispose debris also would release particulate matter and other contaminants associated with motor vehicle operation, including carbon monoxide and ozone precursors (ROG and NO_x). Finally, use of pesticides would result in emissions of ROG.

This analysis considers emissions from both existing SMP activities (conducted pursuant to the 2002 SMP EIR) and additional emissions resulting from implementation of the Proposed Project (SMP update from 2012 to 2022). The existing SMP allows the majority of maintenance activities to be conducted between June 15 and October 15, although some activities occur year-round. The Proposed Project would extend the potential period when maintenance activities could be conducted (for those not occurring year-round), from October 15 to December 31. The overall work that would be conducted within the work window of the existing SMP is not anticipated to increase; rather, all additional work would occur during the extended work window.

Table 3.2-4 summarizes average daily operational emissions for 2012 and 2020 and Table 3.2-5 summarizes annual emissions estimates for 2012 and 2020. For additional information on how emissions were estimated refer to Appendix E. Although daily vehicle activity would not change substantially between 2012 and 2020, daily emissions are expected to decrease because turnover of fleet vehicles would replace higher-emitting vehicles with lower-emitting ones. Consequently, average daily vehicle emissions will be much lower in 2020 compared to 2012. Annual emissions from the Proposed Project compared to the existing SMP would increase corresponding to the increase in the number of work days per year, or twenty-five percent. This increase is offset by the decrease in emissions associated with fleet vehicle turnover.

Table 3.2-4. Estimated Proposed Project Average Daily Emissions of Criteria Air Pollutants, pounds per day

Emissions Source	ROG		NO _x		PM ₁₀		PM _{2.5}	
	2012	2020	2012	2020	2012	2020	2012	2020
Off-Road	44.2	25.7	388.3	138.1	16.3	5.4	16.3	5.4
On-Road	6.1	3.5	45.7	20.0	16.4	16.6	4.0	3.6
Pesticide Use	0.6	0.6	-	-	-	-	-	-
<i>Total</i>	<i>50.9</i>	<i>29.7</i>	<i>434.0</i>	<i>158.1</i>	<i>32.8</i>	<i>22.0</i>	<i>20.4</i>	<i>9.0</i>
BAAQMD Threshold	54		54		82		54	

Note: Daily vehicle trips and vehicle miles traveled would remain the same in the SMP Update as in the existing SMP. Source: Data compiled by Horizon Water and Environment in 2011

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Table 3.2-5. Estimated Proposed Project Annual Emissions of Criteria Air Pollutants, tons per year

Emissions Source	ROG		NO _x		PM ₁₀		PM _{2.5}	
	2012	2020	2012	2020	2012	2020	2012	2020
Existing SMP								
Off-Road	1.9	1.1	16.5	5.9	0.7	0.2	0.7	0.2
On-Road	0.8	0.5	5.9	2.6	2.1	2.2	0.5	0.5
Pesticide Use	0.0	0.0	-	-	-	-	-	-
<i>Total</i>	<i>2.7</i>	<i>1.6</i>	<i>22.4</i>	<i>8.5</i>	<i>2.8</i>	<i>2.4</i>	<i>1.2</i>	<i>0.7</i>
Additional Emissions under the SMP Update (2012-2022)								
Off-Road	0.5	0.3	4.1	1.5	0.2	0.1	0.2	0.1
On-Road	0.1	0.0	1.2	0.2	0.1	0.0	0.1	0.0
Pesticide Use	0.0	0.0	-	-	-	-	-	-
<i>Total</i>	<i>0.6</i>	<i>0.3</i>	<i>5.4</i>	<i>1.7</i>	<i>0.3</i>	<i>0.1</i>	<i>0.2</i>	<i>0.1</i>
Total SMP								
Off-Road	2.3	1.4	20.6	7.3	0.9	0.3	0.9	0.3
On-Road	0.9	0.5	7.2	2.8	2.3	2.2	0.6	0.5
Pesticide Use	0.0	0.0	-	-	-	-	-	-
<i>Total</i>	<i>3.3</i>	<i>1.9</i>	<i>27.8</i>	<i>10.2</i>	<i>3.1</i>	<i>2.5</i>	<i>1.4</i>	<i>0.8</i>
BAAQMD Threshold ¹	10		10		15		10	

Note:

1. See Table 3.2-3 for BAAQMD CEQA Thresholds of Significance for criteria air pollutants.

Source: Data compiled by Horizon Water and Environment in 2011

Table 3.2-4 shows that average daily emissions of criteria air pollutants from the SMP would be below BAAQMD construction significance thresholds, except for NO_x. Table 3.2-5 shows that annual emissions of criteria air pollutants from the Proposed Project would be less than BAAQMD operational significance thresholds, except for NO_x.

Applicable Best Management Practices

The following BMPs would be implemented as part of the SMP Update to control dust during maintenance activities. Descriptions of each BMP are provided in Chapter 2, *Project Description*.

BMP GEN-4: Minimize the Area of Disturbance

BMP GEN-29: Dust Management

Conclusion

Although emissions of criteria air pollutants other than NO_x from the SMP would occur at levels below BAAQMD significance thresholds, implementation of BMPs would minimize PM₁₀ and PM_{2.5} emissions. Average daily and annual emissions of NO_x from the SMP would be substantially greater than BAAQMD significance thresholds throughout the SMP. NO_x emissions in exceedance of BAAQMD significance thresholds are considered a potentially significant impact.

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The District would implement Mitigation Measure AIR-1A, reducing NO_x emissions by 20 percent, which would lower NO_x emissions below the significance threshold in 2020, but not in 2012. As a result, this impact would remain significant after this mitigation.

Therefore, the District would implement either Mitigation Measure AIR-1B or AIR-1C to offset remaining annual NO_x emissions in exceedance of BAAQMD significance thresholds. Implementation of either Mitigation Measure AIR-1B or AIR-1C would reduce this impact to a less than significant level. However, it is possible that these mitigation measures may not be feasible because of the considerations discussed below. If the District found these mitigation measures to be infeasible, then this impact would be considered significant and unavoidable.

Mitigation Measure AIR-1A Reduction in Fleet Emissions

The District will develop a plan to demonstrate that the off-road equipment (more than 50 horsepower) to be used in the SMP Update (i.e., owned, leased, and subcontractor vehicles) would achieve a project-wide, fleet-average 20 percent NO_x reduction compared to the most recent ARB fleet average. Acceptable options for reducing emissions include the use of late-model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, add-on devices (such as particulate filters), and/or other options as they become available.

Mitigation Measure AIR-1B Off-site NO_x Emissions Mitigation Program

SCVWD may establish a program to implement off-site NO_x emissions reduction projects within the SFBAAB to reduce those NO_x emissions from the SMP Update in exceedance of BAAQMD operational significance thresholds. The total reduction will be 9 tons (the average annual exceedance anticipated over the lifetime of the SMP Update, based on the average between estimated 2012 and 2020 emissions), as adjusted based on the emissions reductions to be achieved by Mitigation Measure AIR-1A. The NO_x emission reductions projects will be from sources of emissions that are not required by any existing law to reduce their NO_x emissions. Offsetting annual emissions inherently includes offsetting daily emissions. Therefore, no additional reductions will be required for daily NO_x emissions. Documentation of off-site NO_x reductions will be provided to the BAAQMD.

However, it is possible that this mitigation measure may not be feasible, based on costs, logistics, or other factors. In respect to logistics, whether the District could develop a new off-site mitigation program that effectively reduces emissions to less-than-significant levels in a timely manner is uncertain.

Mitigation Measure AIR-1C NO_x Emissions Offsets

As an alternative to Mitigation Measure AIR-1B, SCVWD will purchase NO_x emission reduction credits to reduce or offset those NO_x emissions in exceedance of BAAQMD operational significance thresholds. The total reduction (or credits) will be 9 tons, as adjusted based on the emissions reductions achieved by Mitigation Measure AIR-1A.

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Offsetting annual emissions inherently includes offsetting daily emissions. Therefore, no additional offsets will be required for daily NO_x emissions.

SCVWD will engage a private broker to facilitate the purchase of credits through the BAAQMD emissions bank. Purchase of these credits from the BAAQMD emissions bank will ensure that NO_x offsets occur in the SFBAAB. Once NO_x emission reduction credits are purchased for a given quantity, that amount of NO_x will be offset in perpetuity. Therefore, a one-time purchase of 9 tons of credits will mitigate for the duration of the SMP Update (2012-2022) as well as for future SMP-related emissions beyond 2022, assuming emissions will not have increased.

Documentation of purchased NO_x offsets will be provided to the BAAQMD.

However, it is possible that this mitigation may not be feasible, based on costs or other factors.

Impact AIR-2: Diesel PM Health Risk during Maintenance Activities (Significance Criteria A, B, C, D; Less than Significant)

Exhaust emissions from on- and off-road vehicles and equipment used for maintenance under the Proposed Project would generate diesel PM, a toxic air contaminant. Individual maintenance activities would last from one day to several weeks. These maintenance activities would be countywide, transitory, and short term, and when they have ceased, so would associated diesel PM emissions.

Applicable Best Management Practices

The following BMP would be implemented as part of the SMP Update, and would help to minimize Diesel PM emissions. A description of the BMP is provided in Chapter 2, *Project Description*.

BMP GEN-35: Pump/Generator Operations and Maintenance

Conclusion

Health risk assessments for diesel PM are typically based on 9-, 40-, and 70-year exposure periods. Because of the short-term and highly variable nature of diesel PM emissions associated with the Proposed Project, exposure to diesel exhaust, including for sensitive receptors, would be well below the exposure period of concern. Therefore, exposure of persons to diesel PM generated by the Proposed Project would be less than significant and no mitigation would be required.

Mitigation Measures: No mitigation is required.

Impact AIR-3: Creation of Objectionable Odors (Significance Criterion E; Less than Significant)

Sediment removal is the only activity in the Proposed Project which has the potential to generate substantial objectionable odors.

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Sediment Removal

Excavated sediment from stream channels may contain high levels of organic material. Natural decomposition of organic material depletes oxygen in the subsurface environment, leading to anaerobic conditions and the generation of hydrogen sulfide. Hydrogen sulfide gas then may be released when sediment is excavated. The potential concentrations of hydrogen sulfide gas released from sediment removal activities would not be substantial enough to adversely affect human health; however, they could cause annoyance by creating an objectionable odor in the vicinity of a specific maintenance/stockpile work site or reuse/disposal location. The intensity of odor from excavated sediment would depend on the amount and quality of sediment.

Conclusion

The BAAQMD indicates that odor impacts could result from siting a new odor source near existing sensitive receptors. However, SCVWD is not aware of instances under the existing SMP when excavated or stockpiled sediment has generated odors that have created an annoyance. Conditions are anticipated to be substantively similar under the SMP Update. Any odors, should they occur, would be localized, short-term, and would not be anticipated to affect a substantial number of people. Therefore, the impact from creation of objectionable odors would be less than significant and no mitigation would be required.

Mitigation Measures: No mitigation is required.