This section includes a description of existing air quality conditions, a summary of applicable regulations, a description of existing air quality conditions, and an analysis of potential air quality impacts associated with the proposed project. Mitigation measures are recommended, as necessary, to reduce significant air quality impacts. This air quality analysis and the associated modeling and health risk assessment were conducted by Sespe Consulting, Inc. (see **EIR Appendix C**).

The County published a Notice of Preparation and Initial Study (NOP/IS) for the proposed project on June 12, 2013. A copy of the NOP/IS, along with comments received during the public review period, is contained in **EIR Appendix A**. The Mojave Desert Air Quality Management District submitted comments indicating staff concurrence with the proposed assessment of potential impacts to be addressed in the EIR.

3.2.1 EXISTING SETTING

MOJAVE DESERT AIR BASIN

The Mojave Desert Air Basin (MDAB) is an assemblage of mountain ranges interspersed with long broad valleys that often contain dry lakes. Many of the lower mountains that dot the vast terrain rise from 1,000 to 4,000 feet above the valley floor. Prevailing winds in the MDAB are out of the west and southwest. These prevailing winds are due to the proximity of the MDAB to coastal and central regions and the blocking nature of the Sierra Nevada range to the north; air masses pushed onshore in Southern California by differential heating are channeled through the MDAB. The MDAB is separated from the Southern California coastal and central California valley regions by mountains (highest elevation approximately 10,000 feet), whose passes form the main channels for these air masses. The Antelope Valley is bordered in the northwest by the Tehachapi Mountains, separated from the Sierra Nevada in the north by the Tehachapi Pass (3,800-foot elevation). The Antelope Valley is bordered in the south by the San Gabriel Mountains, bisected by Soledad Canyon (3,300 feet). The Mojave Desert is bordered in the southwest by the San Bernardino Mountains, separated from the San Gabriel Mountains by the Cajon Pass (4,200 feet). A lesser channel lies between the San Bernardino Mountains and the Little San Bernardino Mountains (the Morongo Valley).

During the summer, the MDAB is generally influenced by a Pacific subtropical high cell that sits off the coast, inhibiting cloud formation and encouraging daytime solar heating. The MDAB is rarely influenced by cold air masses moving south from Canada and Alaska, as these frontal systems are weak and diffuse by the time the reach the desert. Most desert moisture arrives from infrequent warm, moist and unstable air masses from the south. The MDAB averages between 3 and 7 inches of precipitation per year (from 16 to 30 days with at least 0.01 inches of precipitation). The MDAB is classified as a dry-hot desert climate, with portions classified as dry-very hot desert, to indicate at least three months have maximum average temperatures over 100°F.

The Mojave Desert Air Quality Management District (MDAQMD) is the local agency for air quality planning with authority over air pollutant sources.

AIR POLLUTANTS OF CONCERN AND HEALTH EFFECTS

The air pollutants emitted into the ambient air by stationary and mobile sources are regulated by federal and state law. These regulated air pollutants are known as "criteria air pollutants" and are categorized into primary and secondary pollutants. Primary air pollutants are those that are emitted directly from sources. Carbon monoxide (CO), reactive organic gases (ROG), nitrogen oxides (NO_X), sulfur dioxide (SO_2), most particulate matter (PM_{10} and $PM_{2.5}$), lead, and fugitive

dust are primary air pollutants. Of these, CO, SO_2, PM_{10}, and $PM_{2.5}$ are criteria pollutants. ROG and NO_X are criteria pollutant precursors and go on to form secondary criteria pollutants through chemical and photochemical reactions in the atmosphere. Ozone (O_3) and nitrogen dioxide (NO_2) are the principal secondary pollutants. Presented below is a description of each of the primary and secondary criteria air pollutants and their known health effects.

Carbon monoxide (CO) is a colorless, odorless, toxic gas produced by incomplete combustion of carbon substances, such as gasoline or diesel fuel. The primary adverse health effect associated with CO is interference with normal oxygen transfer to the blood, which may result in tissue oxygen deprivation.

Reactive organic gases (ROG) are compounds comprising primarily atoms of hydrogen and carbon. Internal combustion associated with motor vehicle usage is the major source of hydrocarbons. Other sources of ROG include evaporative emissions associated with the use of paints and solvents, the application of asphalt paving, and the use of household consumer products such as aerosols. Adverse effects on human health are not caused directly by ROG, but rather by reactions of ROG to form secondary pollutants such as ozone.

Nitrogen oxides (NO_X) serve as integral participants in the process of photochemical smog production. The two major forms of NO_X are nitric oxide (NO) and nitrogen dioxide (NO_2). NO is a colorless, odorless gas formed from atmospheric nitrogen and oxygen when combustion takes place under high temperature and/or high pressure. NO_2 is a reddish-brown irritating gas formed by the combination of NO and oxygen. NO_X acts as an acute respiratory irritant and increases susceptibility to respiratory pathogens.

Nitrogen dioxide (NO_2) is a byproduct of fuel combustion, produced by combustion of NO and oxygen. NO_2 acts as an acute irritant and, in equal concentrations, is more injurious than NO. At atmospheric concentrations, however, NO_2 is only potentially irritating. There is some indication of a relationship between NO_2 and chronic pulmonary fibrosis. Some increase in bronchitis in children has also been observed at concentrations below 0.3 part per million (ppm). Nitrogen dioxide absorbs blue light; the result is a brownish-red cast to the atmosphere and reduced visibility. NO_2 also contributes to the formation of PM_{10} (particulates having an aerodynamic diameter of 10 microns—or 0.0004 inch—or less in diameter) and ozone.

Sulfur dioxide (SO_2) belongs to the family of sulfur oxide gases (SO_x). SO_2 is a colorless, pungent, irritating gas formed by the combustion of sulfurous fossil fuels. Fuel combustion is the primary source of SO_2. At sufficiently high concentrations, SO_2 may irritate the upper respiratory tract. At lower concentrations and when combined with particulates, SO_2 may do greater harm by injuring lung tissue. A primary source of SO_2 emissions is high sulfur content coal. Gasoline and natural gas have very low sulfur content and hence do not release significant quantities of SO_2. Sulfur dioxide is a precursor to sulfate (SO_4), which is a component of particulate matter. In addition, SO_2 and NO_2 can react with other substances in the air to form acids, which fall to the earth as rain, fog, snow, or dry particles.

Particulate matter (PM) is a mixture of pollutants in liquid and solid forms. Particulate matter may be classified as primary or secondary. Primary particulates are emitted directly by emission sources, whereas secondary particulates are formed through atmospheric reaction of gases. Particulates are usually classified according to size. The particle diameter can vary from approximately 0.005 micron to 100 microns. Particulate matter less than 10 microns in diameter is referred to as PM_{10} (coarse particulates) and less than 2.5 microns is referred to as $PM_{2.5}$ (fine particulates).

Ozone (O_3), or smog, is one of a number of substances called photochemical oxidants that are formed when ROG and NO_X (both byproducts of the internal combustion engine) react with sunlight. Ozone poses a health threat, especially to those who already suffer from respiratory diseases. Additionally, O_3 has been tied to crop damage, typically in the form of stunted growth and premature death. Ozone can also act as a corrosive, resulting in property damage such as the degradation of rubber products.

EXISTING AMBIENT AIR QUALITY

Ambient air quality in San Bernardino County can be inferred from ambient air quality measurements conducted at nearby air quality monitoring stations. The project is located near the Lucerne Valley monitoring station, which measures PM_{10}. Concentrations at this station were less than the federal standard in all but one year (2007) of the decade reviewed. Concentrations are estimated to have exceeded the California PM_{10} standard six or less days each year, except in 2007 when the estimate was 37 days exceeding.

The Hesperia monitoring station is the closest location where ozone is monitored. Ozone levels exceeded the 2008 federal 8-hour standard between 40 and 73 days per year between 2002 and 2011. The California 1-hour standard was exceeded between 15 and 46 days per year.

The Victorville monitoring station collects a full suite of pollutants and is the closest station to monitor CO and NO_2, which are both attainment pollutants.

The South Coast Air Quality Management District (SCAQMD) operates a $PM_{2.5}$ monitoring station in the City of Big Bear Lake. $PM_{2.5}$ concentrations at this station exceeded the federal standard on a handful of days in each year 2005 through 2009, while 2010 and 2011 did not have exceedances.

Table 3.2-1 summarizes the published data from 2009 to 2011 for each year that monitoring data is provided.

TABLE 3.2-1
SUMMARY OF AMBIENT AIR QUALITY DATA

Pollutant	Year		
	2009	2010	2011
Ozone (O_3)			
Maximum 1-Hour Concentration (ppm)	0.123	0.119	0.132
Maximum 8-Hour Concentration (ppm)	0.101	0.101	0.113
Carbon Monoxide (CO)[2]			
Maximum 1-Hour Concentration (ppm)	1.8	8.7	1.9
Maximum 8-Hour Concentration (ppm)	1.1	2.3	1.5
Nitrogen Dioxide (NO_2)			
Maximum 1-Hour Concentration (ppm)	0.059	0.065	0.060
Annual Arithmetic Mean Concentration (ppm)	0.015	0.015	0.015
Respirable Particulate Matter (PM_{10})			
Maximum 24-Hour Concentration ($\mu g/m^3$)	93	43	33
Annual Arithmetic Mean ($\mu g/m^3$)	17.3	14.6	13.8
Fine Particulate Matter ($PM_{2.5}$)			

Pollutant	Year		
	2009	2010	2011
Maximum 24-Hour Concentration ($\mu g/m^3$)	29.4	27.5	30.6
Annual Arithmetic Mean ($\mu g/m^3$)	9.9	8.4	8.4

Source: EIR Appendix C, Sespe 2013
Notes: $\mu g/m^3$ = micrograms per cubic meter; ppm = parts per million
Ozone is from Hesperia Monitoring Station operated by the MDAQMD.
NO_2 and CO concentrations are from Victorville Monitoring Station operated by the MDAQMD.
PM_{10} concentrations are from Lucerne Valley Middle School Monitoring Station operated by the MDAQMD.
$PM_{2.5}$ concentrations are from Big Bear City Monitoring Station operated by SCAQMD.

VISIBILITY

Concerns related to visibility are typically related to the aesthetic damage resulting from air pollution. The project is within 100 kilometers of several Class I Wilderness Areas, which are areas protected from impacts on visibility, ozone phytotoxicity, and deposition of nitrates and sulfates that can acidify water bodies under the Clean Air Act. Class I Wilderness Areas within 100 kilometers of the project include San Gorgonio (14 miles), Cucamonga (30 miles), San Jacinto (34 miles), Joshua Tree National Park (35 miles), and San Gabriel (45 miles).

Good visibility is essential to the enjoyment of national parks and scenic areas. Across the United States, regional haze has decreased the visual range in these pristine areas from 140 miles to 35–90 miles in the west and from 90 miles to 15–25 miles in the east. This haze is composed of small particles that absorb and scatter light, affecting the clarity and color of what humans see in a vista. The pollutants that create haze (also called haze species) are measurable as sulfates, nitrates, organic carbon, elemental carbon, fine soil, and coarse mass. Anthropogenic sources of haze include industry, motor vehicles, agricultural and forestry burning, and dust from soils disturbed by human activities. Pollutants from these sources, in concentrations much lower than those which affect public health, can impair visibility anywhere. Natural forest fires, biological emissions, and other natural events also contribute to haze species concentrations. Visibility-reducing particles can be transported long distances from where they are generated, thereby producing regional haze. When they are transported to and occur in national parks and wilderness areas, the reduced visibility impairs the quality and the value of the wilderness experience.

Conditions in the San Gorgonio Wilderness Area would be of primary concern for this project because it is closest, and other areas would experience less severe impacts. The environmental setting for each Class I Wilderness Area in California is found in the California Regional Haze Plan. The San Gorgonio Wilderness Area description from this plan is provided in **EIR Appendix C**.

TOXIC AIR CONTAMINANTS

Toxic air contaminants (TACs) are not considered criteria pollutants in that TACs are not addressed through the setting of federal or state ambient air quality standards. Instead, the U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) regulate TACs with statutes and regulations that generally require the use of the maximum or best available control technology to limit emissions. At the state level, CARB has authority for the regulation of emissions from motor vehicles, fuels, and consumer products. In 1998, CARB added diesel-exhaust particulate matter (DPM) to the list of toxic air contaminants. DPM is the primary toxic air contaminant of concern for mobile sources. Of all controlled toxic air contaminants, emissions of DPM are estimated to be responsible for about 70 percent of the total ambient TAC

risk. CARB has made the reduction of the public's exposure to DPM one of its highest priorities, with an aggressive plan to require cleaner diesel fuel and cleaner diesel engines and vehicles.

The MDAQMD does not publish health risk estimates for areas within its jurisdiction. Because the project area is near the boundary of the Mojave Desert and South Coast air basins, the SCAQMD Multiple Air Toxics Exposure Study (MATES) III risk map that shows total cancer risk of approximately 85 excess cancer cases per one million people exposed in the Big Bear Lake area is considered representative of conditions in the area of the project (see Figure 3 of **EIR Appendix C**).

It should be noted that the SCAQMD's MATES study is based on ambient air quality monitoring data from several monitoring stations in the South Coast Air Basin. The MATES III study includes fixed monitoring sites (where data is collected over multiple years) and microscale or temporary sites where monitoring occurred for a limited time period (six to ten weeks). The nearest fixed air monitoring site to the project vicinity is the Inland Valley San Bernardino station located at 14360 Arrow Highway in Fontana, which is over 60 miles southwest of the project site. The MATES III study included a temporary site that appears to be located closer to the project, but no address is provided in the MATES III documentation. The MATES III study acknowledges, "Since the sampling periods for the microscale sites are limited, annual averages for measured substances cannot be calculated" (EIR Appendix C, Sespe 2013, p. 4). The ambient health risk identified in Figure 3 of **EIR Appendix C** includes projection of risk levels from locations that were monitored compared to those that were not. This discussion overlooks these details and considers the risk map published by the SCAQMD at face value such that it represents existing conditions at the project site.

As previously stated, DPM accounts for roughly 70 percent of the cancer risk from air pollution in urban areas where on-road sources dominate the inventory. Diesel engines are a ubiquitous source and thus it is not surprising that stationary source TAC effects "are generally much lower than region-wide risk levels; region-wide risks tend to overwhelm any potential local 'hot spots'" (EIR Appendix C, Sespe 2013, p. 4).

3.2.2 REGULATORY FRAMEWORK

Regulations that affect air quality consist primarily of those promulgated under the federal and state clean air acts. Other regulations that affect air quality include those related to federal conformity, impacts on Class I and Class II Wilderness Areas, and impacts on health risk.

AMBIENT AIR QUALITY STANDARDS

The federal Clean Air Act and the California Clean Air Act each contain comprehensive frameworks for air quality planning and regulation. Title 40 of the Code of Federal Regulations (CFR) and Title 17 of the California Code of Regulations (CCR) contain requirements that have been promulgated under authority granted to the EPA and CARB by the acts.

Criteria air pollutants include SO_X, NO_X, PM, CO, lead, and ground-level ozone. Ambient air quality standards (AAQS) are developed by the EPA and CARB for each of the criteria pollutants. Primary AAQS are designed to protect human health, with an adequate margin of safety, including sensitive populations such as children, the elderly, and individuals suffering from respiratory disease. Secondary AAQS are designed to protect public welfare from any known or anticipated adverse effects of a pollutant (e.g., building facade degradation, reduced visibility, and damage to crops and domestic animals).

Ambient air quality standards and related monitoring programs are among the many devices established by air quality regulations (40 CFR 50–51). Geographic areas called "attainment areas" are classified by the EPA and CARB based on whether the ambient air in the area meets the AAQSs. An attainment area is an area in which pollutant concentrations are less than or equal to the AAQS, while nonattainment areas have pollution levels above the AAQS. State and federal AAQS are shown in **Table 3.2-2**.

TABLE 3.2-2
AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards	National Standards
Ozone	8 Hour	0.070 ppm (137$\mu g/m^3$)	0.075 ppm
	1 Hour	0.09 ppm (180 $\mu g/m^3$)	–
Carbon Monoxide	8 Hour	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)
	1 Hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)
Nitrogen Dioxide	1 Hour	0.18 ppm (339 $\mu g/m^3$)	100 ppb
	Annual Arithmetic Mean	0.030 ppm (57 $\mu g/m^3$)	53 ppb (100 $\mu g/m^3$)
Sulfur Dioxide	24 Hour	0.04 ppm (105 $\mu g/m^3$)	N/A
	3 Hour	–	N/A
	1 Hour	0.25 ppm (665 $\mu g/m^3$)	75 ppb
Particulate Matter (PM_{10})	Annual Arithmetic Mean	20 $\mu g/m^3$	N/A
	24 Hour	50 $\mu g/m^3$	150 $\mu g/m^3$
Particulate Matter – Fine ($PM_{2.5}$)	Annual Arithmetic Mean	12 $\mu g/m^3$	15 $\mu g/m^3$
	24 Hour	N/A	35 $\mu g/m^3$
Sulfates	24 Hour	25 $\mu g/m^3$	N/A
Lead	Calendar Quarter	N/A	1.5 $\mu g/m^3$
	30 Day Average	1.5 $\mu g/m^3$)	N/A
Hydrogen Sulfide	1 Hour	0.03 ppm (42 $\mu g/m^3$)	N/A
Vinyl Chloride (chloroethene)	24 Hour	0.01 ppm (26 $\mu g/m^3$)	N/A
Visibility-Reducing Particles	8 Hour (10:00 to 18:00 PST)	–	N/A

Source: EIR Appendix C, Sespe 2013, p. 8

Notes: mg/m^3 = milligrams per cubic meter; ppm = parts per million; ppb = parts per billion; $\mu g/m^3$ = micrograms per cubic meter

In order to make progress toward attainment with the AAQS, each state and air district containing federal nonattainment areas is required to develop a written plan for improving air quality in those areas. These plans are called State Implementation Plans (SIP) and Attainment Plans. California's SIP contains mobile source and consumer product emission control strategies proposed by CARB and a compilation of stationary and area source strategies that have been developed by local air districts under CARB supervision. Through these plans, the state and local air districts outline efforts that they will take to reduce air pollutant concentrations to levels below the standards. Federal and state attainment status designations assigned by the EPA and CARB for the project area are summarized in **Table 3.2-3**.

TABLE 3.2-3
FEDERAL AND STATE AMBIENT AIR QUALITY ATTAINMENT STATUS FOR THE MDAB

Pollutant	Federal	State
Ozone (O_3)	Nonattainment	Nonattainment
Coarse Particulate Matter (PM_{10})	Nonattainment	Nonattainment
Fine Particulate Matter ($PM_{2.5}$)	Unclassified/Attainment	Nonattainment
Carbon Monoxide (CO)	Attainment	Attainment
Nitrogen Dioxide (NO_2)	Unclassified/Attainment	Unclassified/Attainment
Sulfur Dioxide (SO_2)	Unclassified/Attainment	Unclassified/Attainment
Lead	Attainment	Attainment
Particulate Sulfate	N/A	Attainment
Hydrogen Sulfide	N/A	Attainment
Visibility Reducing Particles	N/A	Unclassified

Source: EIR Appendix C, Sespe 2013, p. 9

California ambient air quality standards (CAAQS) are more stringent than the national ambient air quality standard (NAAQS). Existing law requires district plans for attaining CAAQS to assess the cost-effectiveness of available and proposed emission control measures. Proposed emission control measures in the Attainment Plans are typically developed into air district rules.

Mojave Desert Air Quality Management District

The MDAQMD is the agency primarily responsible for ensuring that federal and state ambient air quality standards are not exceeded and that air quality conditions are maintained. Responsibilities of the MDAQMD include, but are not limited to, adopting and enforcing rules and regulations concerning sources of air pollution, issuing permits for stationary sources of air pollution, monitoring ambient air quality and meteorological conditions, and implementing programs and regulations required by the federal Clean Air Act and Clean Air Act Amendments. The MDAQMD also assists CARB in preparing the State Implementation Plan by preparing Attainment Plans that demonstrate how the ambient air quality standards will be achieved. The Attainment Plans describe the rules that will be developed and other means by which the MDAQMD will manage the emissions within its jurisdiction. MDAQMD Attainment Plans are listed in **Table 3.2-4**.

TABLE 3.2-4
MDAQMD AIR QUALITY ATTAINMENT PLANS

Name of Plan	Date of Adoption	Standard(s) Targeted	Applicable Area	Pollutant(s) Targeted	Attainment Date[1]
Federal 8-Hour Ozone Attainment Plan (Western Mojave Desert Nonattainment Area	June 2008	Federal 8-hour ozone (84 ppb)	Western Mojave Desert Nonattainment Area (MDAQMD portion)	NO_x and VOC/ROG	2021
2004 Ozone Attainment Plan (State and Federal)	April 2004	Federal 1-hour ozone	Entire district	NO_x and VOC/ROG	2007
Triennial Revision to the 1991 Air Quality Attainment Plan	January 1996	State 1-hour ozone	Entire district	NO_x and VOC/ROG	2005
Mojave Desert Planning Area Federal Particulate Matter Attainment Plan	July 1995	Federal daily and annual PM_{10}	Mojave Desert Planning Area	PM_{10}	2000
1991 Air Quality Attainment Plan	August 1991	State 1-hour ozone	San Bernardino County portion	NO_x and VOC/ROG	1994

Source: EIR Appendix C, Sespe 2013, p. 9

[1] A historical attainment date given in an attainment plan does not necessarily mean that the affected area has been re-designated to attainment.

The MDAQMD Attainment Plans contain the rules proposed for adoption. Current MDAQMD rules that apply to project sources include:

- **Rule 201 – Permits to Construct** applies to the construction of air emissions sources that are not otherwise exempt under Rule 219.
- **Rule 203 – Permit to Operate** requires air emissions sources that are not exempted by Rule 219 to obtain operating permit.
- **Rule 204 – Requirements** contains rule language describing New Source Review including Best Available Control Technology (BACT) and emissions offset requirements for stationary sources.
- **Rule 219 – Equipment Not Requiring a Permit** describes the type of equipment that does not require a permit pursuant to District Rules 201 and 203.
- **Rule 401 – Visible Emissions** limits visibility of fugitive dust to less than No. 1 on the Ringlemann Chart (i.e., 20 percent opacity).
- **Rule 402 – Nuisance** applies when complaints from the public are received by the district.
- **Rule 403 – Fugitive Dust** prohibits visible dust beyond the property line of the emission source, requires "every reasonable precaution" to minimize fugitive dust emissions and prevent trackout of materials onto public roadways, and prohibits greater than 100 $\mu g/m^3$ difference between upwind and downwind particulate concentrations.
- **Rule 403.2 – Fugitive Dust Control** for the Mojave Desert Planning Area contains the following requirements applicable to limestone processing facilities:

a. Stabilize industrial unpaved roads carrying more than ten vehicle trips per day with the majority of those vehicles weighing 30 tons or more.

b. Enclose exterior belt conveyors sufficiently to cover the top and sides of the bulk material being transferred, or employ an alternate dust suppression system sufficient to prevent visible fugitive dust.

c. Manage or treat bulk material open storage piles sufficiently to prevent visible fugitive dust emissions. For purposes of this rule, active watering during visible dusting episodes shall be sufficient to maintain compliance.

d. Cover loaded bulk material haul vehicles while traveling upon publicly maintained paved surfaces.

e. Employ a dust suppression system at bulk material transfer points sufficient to prevent visible fugitive dust.

f. Stabilize or eliminate bulk material open storage piles that have been or are expected to be inactive for at least one year.

g. Stabilize as much unpaved operations area as is feasible.

h. Vacuum sweep bulk material spills on paved surfaces weekly or more often, as needed.

i. Prevent facility-related bulk material trackout on publicly maintained paved surfaces.

j. Clean up facility-related bulk material trackout and spills on publicly maintained roads within 24 hours.

k. Employ belt cleaners and/or conveyor return scrapers to minimize conveyor spillage.

- **Rule 404 – Particulate Matter Concentration** sets concentration limits based on the flow rate of the discharge. The concentration limits would apply to discharge from a stack (e.g., baghouse).

- **Rule 405 – Solid Particulate Matter Weight** limits emissions based on the weight of material processed.

- **Rule 900 – New Source Performance Standards** incorporates federal regulation (40 CFR 60) that affects the construction of emissions units. Requirements may or may not apply depending on the size, construction, and manufacture date of equipment that will be used. Specifically, NSPS OOO (40 CFR 60.670) applies to equipment in nonmetallic mineral processing plants.

- **Regulation XIII – New Source Review** contains a number of rules that are applied to new and modified sources.

- **Rule 1520 – Control of Toxic Air Contaminants from Existing Sources** implements AB 2588 Air Toxics Hot Spots requirements.

- **Rule 2002 – General Federal Actions Conformity** requires federal actions to conform to the applicable implementation plan.

San Bernardino County General Plan

The General Plan includes policies and programs that are intended to protect air quality. The General Plan policies and programs that assist in the protection of air quality are listed below.

Policy CO 4.1 Because developments can add to the wind hazard (due to increased dust, the removal of wind breaks, and other factors), the County will require either as mitigation measures in the appropriate environmental analysis required by the County for the development proposal or as conditions of approval if no environmental document is required, that developments in areas identified as susceptible to wind hazards to address site-specific analysis of:

a. Grading restrictions and/or controls on the basis of soil types, topography or season.

b. Landscaping methods, plant varieties, and scheduling to maximize successful revegetation.

c. Dust-control measures during grading, heavy truck travel, and other dust generating activities.

Toxic Air Contaminant Regulations

TACs are pollutants listed by the State of California that pose acute, chronic, and/or cancer health risks to exposed individuals. Hazardous air pollutants (HAP) are pollutants listed by the EPA that pose acute, chronic, and/or cancer health risks to exposed individuals.

The California Office of Environmental Health Hazard Assessment (OEHHA) is responsible for developing the scientific basis for listing and evaluation of health risk from TACs. CARB is responsible for quantifying toxic air contaminant emissions and controlling TACs by promulgation and enforcement of air toxic control measures (ATCM). Assembly Bill (AB) 1807, passed in 1983, requires the State of California to identify and control TACs. TACs are formally identified through a detailed process that starts when a chemical's risk to human health and the environment is above certain criteria. Once TACs are identified, the emission sources, controls, technologies, and costs are reviewed to determine if regulation is needed to reduce emissions. In 1993, AB 1807 was amended by passage of AB 2728, which requires the State to list the 189 federal HAPs in the toxic air contaminants list.

In 1987, the AB 2588 air toxics "hot spots" program was established. This program requires subject facilities to report their air toxics emissions, determine localized health risks, and notify nearby residents for whom risk may exceed the notification level (CARB 2008). The program was amended in 1992 to require facilities to reduce high risks (e.g., greater than 100 in 1 million cancer risk, or 10 hazard index) through the development of a risk management plan. The Hotspots Analysis and Reporting Program is a software program that calculates TAC emission inventories and performs health risk assessments for use in the AB 2588 program.

The Off-Road Vehicle Regulation (13 CCR 2449) was adopted by CARB in 2007 to reduce diesel particulate matter (DPM) and NO_x emissions from in-use off-road heavy-duty diesel vehicles in California. The regulation was amended by CARB in December 2010. Prior to that time, the regulation phased in from 2010 to 2020, but the December 2010 rulemaking pushed the start date back to 2014 and the date of final implementation back to 2024. In addition, until CARB receives a waiver from the EPA to regulate in-use off-road engines, the provisions that require

further control are not enforceable. Registering fleets through the Diesel Off-Road Online Reporting System (DOORS), labeling equipment, idling limits, and sale notification are requirements of the Off-Road Regulation that are still in effect. Regulatory Advisory 10-414 describes the enforcement delay and was last updated in 2011.

The On-Road Heavy Duty Diesel Vehicle (In-Use) Regulation (13 CCR 2025) was adopted in 2010. The regulation requires diesel trucks and buses that operate in California to be upgraded to reduce emissions. Heavier trucks were required to be retrofitted with particulate matter filters beginning January 1, 2012, and older trucks must be replaced starting January 1, 2015. By January 1, 2023, nearly all trucks and buses will need to have 2010 model year engines or equivalent. The regulation applies to nearly all privately and federally owned diesel-fueled trucks and buses and to privately and publicly owned school buses with a gross vehicle weight rating greater than 14,000 pounds.

Portable engines are regulated by an air toxic control measure (17 CCR 93116) that limits DPM and may also be regulated by the Portable Equipment Registration Program or a local air district permit. In-use portable engines regulated by the ATCM begin phasing in controls to meet emissions reductions criteria on January 1 of 2013, 2017, and 2020. By 2020, in-use portable engines will have Tier 4 particulate emissions characteristics. The Portable Equipment Registration Program requires applications for new registrations to be accepted only for engines that emit less than the interim Tier 4 standards.

3.2.3 IMPACTS AND MITIGATION MEASURES

STANDARDS OF SIGNIFICANCE

Consistent with Appendix G of the California Environmental Quality Act (CEQA) Guidelines and the MDAQMD guidelines, the project would have a significant impact if it would:

1) Violate any air quality standard or contribute substantially to an existing or projected air quality violation.

2) Conflict with or obstruct implementation of an applicable air quality plan.

3) Expose sensitive receptors to substantial pollutant concentrations.

4) Create objectionable odors affecting a substantial number of people.

5) 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).

The Initial Study prepared for the proposed project (see **EIR Appendix A**) determined that there would be no impact related to objectionable odors (standard of significance 4). Therefore, this standard of significance is not discussed further.

An air quality impact is considered significant if the proposed project would violate any ambient air quality standard, contribute substantially to an existing or projected air quality violation, or expose sensitive receptors to substantial pollutant concentrations. MDAQMD thresholds have also been used to determine air quality impacts in this analysis. To assist local jurisdictions in the evaluation of air quality impacts, the MDAQMD has published a guidance document for the

preparation of the air quality portions of environmental documents that includes thresholds of significance to be used in evaluating land use proposals. Thresholds of significance are based on a source's projected impacts and are a basis from which to apply mitigation measures. The MDAQMD-recommended thresholds are identified in **Table 3.2-5**.

TABLE 3.2-5
MDAQMD-RECOMMENDED SIGNIFICANCE THRESHOLDS

Significance Level	Project-Generated Emissions	
	Tons per Year	Pounds per Day
Carbon Monoxide (CO)	100	548
Nitrogen Oxide (NO_x)	25	137
Reactive Organic Gas (ROG)	25	137
Sulfur Oxide (SO_x)	25	137
Course Particulate Matter (PM_{10})	15	82
Fine Particulate Matter ($PM_{2.5}$)	15	82
Hydrogen Sulfide	10	54
Lead	0.6	3

Source: EIR Appendix C, Sespe 2013, p.17

The MDAQMD guidelines state, "Note that the emissions thresholds are given as a daily value and an annual value, so that multi-phased projects (such as project with a construction phase and a separate operational phase) with phases shorter than one year can be compared to the daily values." The project proposes actions lasting longer than one year; therefore, for the purposes of this analysis, the MDAQMD daily thresholds do not apply and the project is evaluated in comparison to MDAQMD annual thresholds.

Localized Significant Impact Thresholds

In addition to overall regional air pollutant emission impacts, there is the potential for localized air pollutant impacts from land use projects. Localized adverse air quality impacts from stationary sources are not addressed by the values in **Table 3.2-5**. Local significance thresholds represent the maximum emissions at a project site that are not expected to cause or contribute to an exceedance of the most stringent national or state ambient air quality standards. To fall within local significance thresholds, the project's modeled concentration of pollutants may not exceed the increment between the ambient air quality standards and background concentrations.

In the absence of MDAQMD localized significant impact thresholds, significant impact levels (SILs) published by the San Joaquin Air Pollution Control District (SJVAPCD) to the Dispersion and Risk Assessment Modelers Group list server (August 12, 2013) are used to evaluate potential localized adverse air quality impacts. SJVAPCD guidance contains separate SILs for point and fugitive sources of PM_{10} and $PM_{2.5}$. The SJVAPCD significant impact levels are considered appropriate for the purpose of this analysis, as they closely reflect the rural nature of the Mojave Desert Air Basin. In addition, the SILs draw a distinction between point and fugitive sources and provide corresponding annual concentrations.

Table 3.2-6 shows the hourly and annual SIL thresholds with sensitive receptors located in the project vicinity.

TABLE 3.2-6
SIGNIFICANT IMPACT LEVEL (SIL) THRESHOLD – MICROGRAMS PER CUBIC METER ($\mu G/M^3$)

PM_{10} – 24-Hour	PM_{10} – Annual	$PM_{2.5}$ – 24-Hour	$PM_{2.5}$ – Annual
10.4	2.08	2.5	0.63

Source: EIR Appendix C, Sespe 2013, p. 37

Toxic Air Contaminant Thresholds

The MDAQMD regulates levels of air toxics through a permitting process that covers both construction and operation. The MDAQMD has adopted Regulation XIII for both new and modified sources that use materials classified as air toxics. The MDAQMD guidelines for permit processing consider any project involving the emission of a carcinogenic or toxic air contaminant identified in MDAQMD Regulation XIII that exceeds the maximum individual cancer risk of 10 in one million and/or a Hazard Index (HI) (non-cancerous) greater than or equal to 1 to be significant.

METHODOLOGY

As discussed in Chapter 3.0, Project Description, Omya operates two other quarries in the area. These two quarries, the Sentinel and Butterfield Quarries, are located approximately 3 miles south of the processing plant on Crystal Creek Road. (The Sentinel and Butterfield Quarries are currently undergoing a separate CEQA evaluation for proposed expansion.) The combined production from all the operating quarries (Butterfield, Sentinel, and White Knob) is limited by the processing plant maximum production rate. The project would allow up to 680,000 tons per year of finished ore to be extracted exclusively from the White Knob and White Ridge quarries. This would result in no material being quarried at Sentinel and Butterfield as 680,000 tons per year meets the maximum production capacity at the Lucerne Valley processing plant, which is an indirect effect of the project that necessitates calculation of Sentinel and Butterfield emissions in the air quality baseline (existing conditions). Moreover the available vehicular activity data does not distinguish which units operate in each quarry. Thus, the emissions from vehicles are calculated for the fleet and apportioned to quarries based on throughput amount and to units operating on roads by vehicle miles traveled (VMT).

Baseline Emissions

Under baseline (existing) conditions, the Lucerne Valley processing plant is receiving ore from the Butterfield, Sentinel and White Knob Quarries. Omya provided information on historical activity levels and equipment that was used to estimate baseline air pollutant emissions for the project. In general, the quarries and processing plant consist of operations and equipment that emit fugitive dust and diesel exhaust. Baseline emissions were estimated using methods and parameters from the Mineral Industry Emissions Inventory Guidance, emission factors from the EPA's AP-42 document, and the emissions modeling software EMFAC2011, OFFROAD2011, and CalEEMod. Baseline emission sources modeled include vehicles, dust from equipment travel over dirt roads, dust generated during mining and processing activities, and combustion during mining and processing (see Tables 11 through 15 located on pages 26-28 of **EIR Appendix C**).

Project Emissions

As previously stated, the project would allow up to the maximum production rate of 680,000 tons per year of finished ore to be extracted exclusively from the White Knob and White Ridge quarries. Realization of this maximum production rate would result in no material being quarried at Sentinel and Butterfield as the combined production from all the operating quarries (Butterfield, Sentinel, and White Knob) is limited by the processing plant 680,000-ton maximum production rate. Therefore, the project emission impact analysis assumes the maximum production rate of 680,000 tons per year of finished ore to be extracted exclusively from the White Knob and White Ridge quarries. The project emission impact analysis also accounts for the required reclamation activities that would occur after closure of the quarry. Reclamation activities would not result in air pollutant emissions greater than that emitted during quarry operations.

Project emissions (see **Tables 3.2-9** and **3.2-10** below) were also estimated using methods and parameters from the Mineral Industry Emissions Inventory Guidance, emission factors from the EPA's AP-42 document, and the emissions modeling software EMFAC2011, OFFROAD2011, and CalEEMod. Emission sources modeled include vehicles, dust from equipment travel over dirt roads, dust generated during mining and processing activities, and combustion during mining and processing (see **EIR Appendix C**).

Air dispersion/deposition modeling and a health risk assessment were then performed to determine the potential for the project to result in significant localized impacts.

Several models were run with a consistent set of volume sources and a varying list of receptors (i.e., discrete, boundary, and grid). The discrete receptor model includes the receptors shown in **Table 3.2-7** and **Figure 3.2-1**.

TABLE 3.2-7
PROJECT VICINITY RECEPTORS

Receptor Number	UTM, Easting (meters)	UTM, Northing (meters)	Type – Location
R1	493,520	3,801,220	Horse Springs Campground
R2	497,885	3,805,925	Residence – 2 miles north of White Knob Quarry
R3	500,757	3,805,056	Residence – 1.75 miles northeast of White Knob Quarry
R4	503,805	3,802,145	Residence – 2.66 miles east of White Knob Quarry
R5	504,720	3,804,980	Residence – 0.25 mile northwest of processing plant
R6	509,570	3,795,820	Holcomb Valley Campground
R7	498,780	3,797,730	Big Pine Flat Campground

Source: EIR Appendix C, Sespe 2013, p. 32

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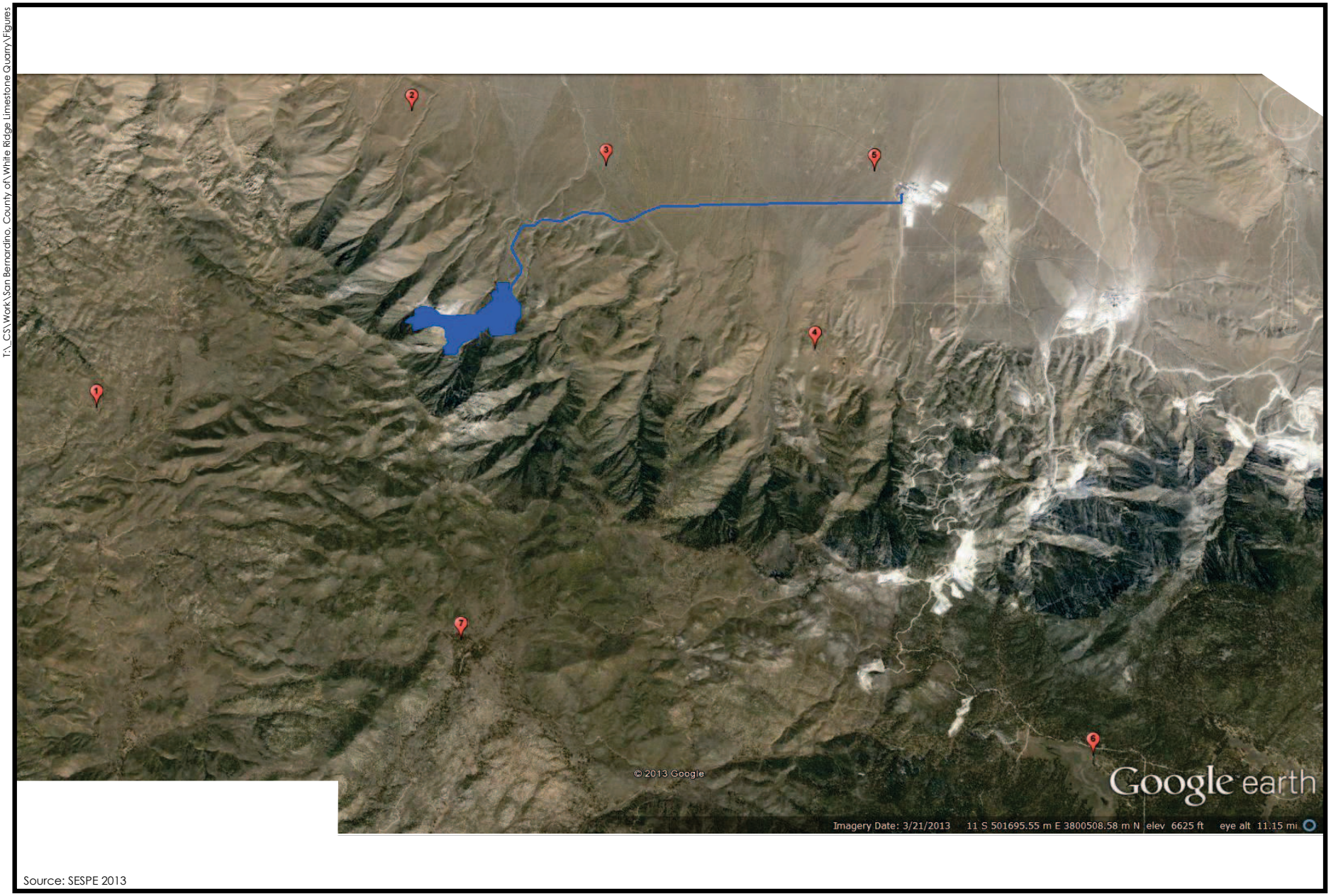

Source: SESPE 2013

0 .575 1.15
MILES

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Figure 3.2-1
Receptors in Project Vicinity

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The boundary receptor run includes only receptors along a boundary around the quarry area (**Figure 3.2-2**). The boundary receptor run is used to estimate concentrations of PM_{10} and $PM_{2.5}$ at the point of maximum impact for comparison to primary ambient air quality standards (i.e., to protect human health). The boundary on the north was chosen to coincide with the east–west-trending foothills. The boundaries on the south and west were chosen to reflect the concentration that may be experienced by an individual on the nearest roadway. The boundary on the east was chosen to exclude residences located in the foothills along Crystal Creek Road (i.e., since the residences are outside the project boundary, the boundary concentrations are closer to the sources and conservatively represent concentrations at the residences).

Grid receptor runs were used in the health risk assessment and the deposition model. The health risk assessment grid uses 200-meter spacing. The deposition model grid uses 500-meter spacing.

The deposition model is the only model run prepared for the project that assumes the plume is depleted by deposition. The deposition model considers three sizes of particulates. Total suspended particulates (TSP) (i.e., PM_{30}), PM_{10}, and $PM_{2.5}$ are calculated for each source, and the amount of each size varies based on the source accordingly. For instance, the dominant source of dust emissions is the roads, which emit a combination of dust and diesel particulate matter. When dust and DPM emissions are combined, the resulting fractionation for unpaved roadway particulates is 3.34 percent $PM_{2.5}$, 25.5 percent $PM_{10-2.5}$, and 71.2 percent PM_{30-10}. The combination of sources operating at the processing plant results in fractionation of 4.5 percent $PM_{2.5}$, 14.0 percent $PM_{10-2.5}$, and 81.5 percent PM_{30-10}. Other source fractionations were varied according to the calculated amounts of dust and DPM.

The weight of particles presented in **Table 3.2-8** is most appropriate for dust particles, which constitute the majority of particulate matter emitted by project sources. Because the diesel particulates are emitted in smaller quantities, the dust densities are applied to all particulates regardless of their origin.

TABLE 3.2-8
DEPOSITION PARAMETERS

Particle Size Bin (μg)	Assumed Density (grams/cubic centimeter)
2.5	1.0
2.5–10	1.75
10–30	2.5

Source: EIR Appendix C, Sespe 2013, p. 32

PROJECT IMPACTS AND MITIGATION MEASURES

Emissions of Air Pollutants Resulting in Violation of Air Quality Standards or Contributing to Existing Violations (Standard of Significance 1)

Impact 3.2.1 Project-generated operational emissions would exceed applicable significance thresholds and could contribute to regional nonattainment conditions. As a result, this impact is considered **potentially significant.**

Implementation of the project would result in long-term operational emissions of criteria air pollutants and ozone precursors (i.e., ROG and NOx). The project does not propose to construct

any structures other than excavations and piles, which are created from mining operations, and thus only project operations are assessed. As previously stated, baseline (current) emissions and project emissions were estimated from vehicle sources, equipment traveling over dirt roads, mining and processing activities, and combustion sources. The incremental increase of air pollutant emissions over baseline conditions as a result of the proposed project, is compared to the mass-based thresholds from the MDAQMD CEQA Handbook in **Table 3.2-9**.

TABLE 3.2-9
LONG-TERM OPERATIONAL EMISSIONS (UNMITIGATED)

Source	Emissions (tons/year)						
	ROG	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$	Lead
Proposed Project (contribution beyond current baseline conditions)*	1.0	12.5	3.4	0.0	**37.1**	11.7	0.0
MDAQMD Potentially Significant Impact Threshold	25 tons/year	25 tons/year	100 tons/year	25 tons/year	15 tons/year	15 tons/year	0.6 tons/year
Exceed MDAQMD Threshold?	**No**	**No**	**No**	**No**	**Yes**	**No**	**No**

Source: EIR Appendix C, Sespe 2013, p. 34

*Notes: * These emissions are based on a total of 680,000 tons of crushed ore to the processing plant per year all coming from the proposed project and used as a worst-case scenario, if the Butterfield/Sentinel quarries are no longer producing ore. A total of 680,000 tons is used as this is the maximum production capacity at the processing plant. However, the crushed ore to the processing plant for the proposed project is expected to average 222,500 tons per year and therefore, the emissions would be much less than the worst case scenario shown here.*

As shown in **Table 3.2-9**, the increment in pollutant emissions would occur below levels that will significantly affect regional air quality emissions, with the exception of PM_{10}, which is predicted to exceed the mass-based MDAQMD thresholds for PM_{10}, which would be a **potentially significant impact**. Therefore, the following mitigation is required.

Mitigation Measures

MM 3.2.1 It shall be required in the final Amended Mine and Reclamation Plan that the following PM_{10} reduction measures be implemented as part of quarry operations and reclamation.

- Limit maximum speed on unpaved roads to 25 miles per hour.
- Water all unpaved roads at least twice per day, more if needed, to control dust emissions by at least 80 percent. Alternatively, a dust palliative, such as magnesium chloride may be used to treat the unpaved roads.
- Water all areas to be graded and areas where bulldozers operate at least twice per day, more if needed.

Timing/Implementation: *Required to be placed in the final version of the Amended Plan and implemented during mining and reclamation activities*

Enforcement/Monitoring: *County of San Bernardino Land Services Department*

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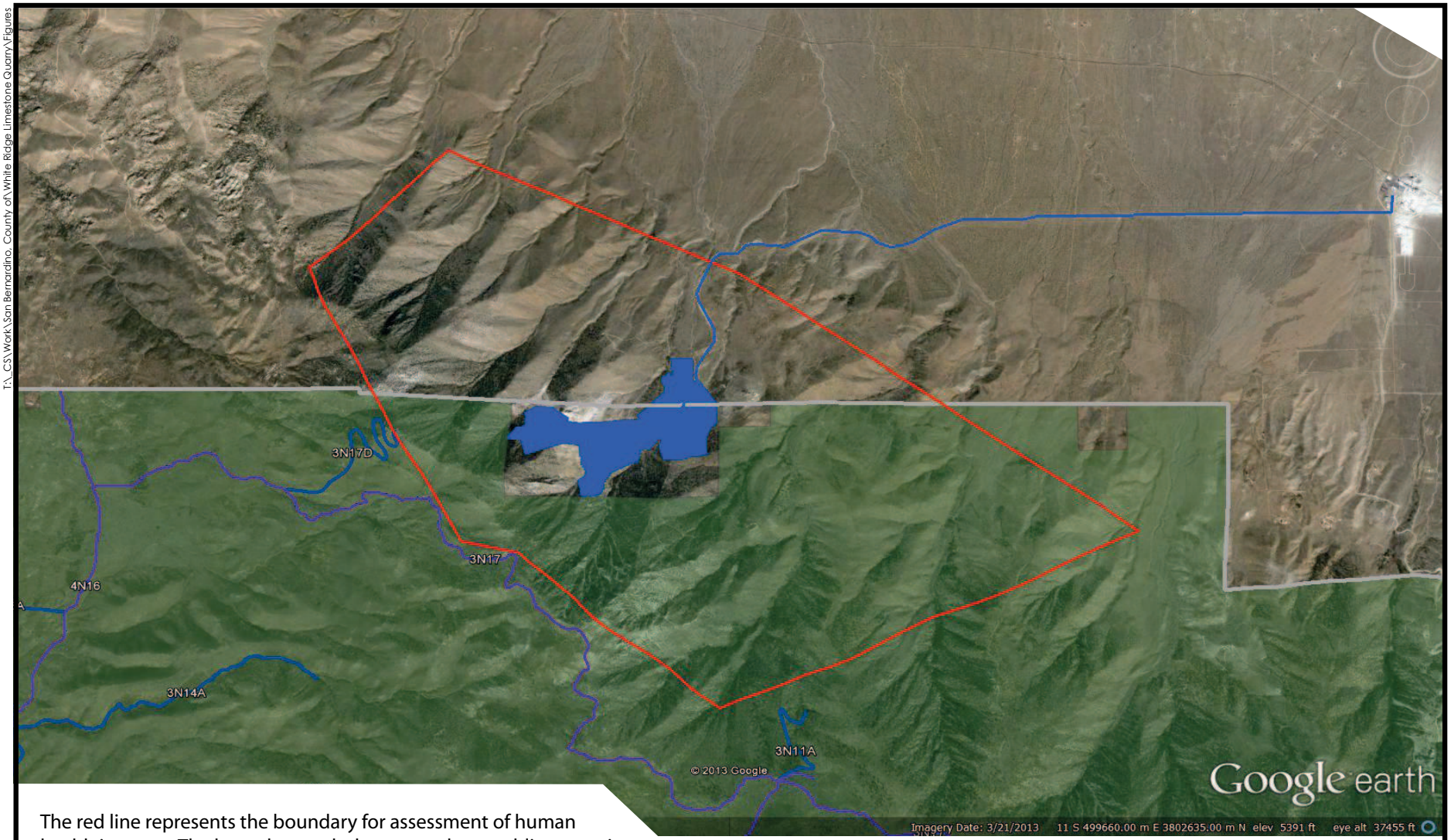

The red line represents the boundary for assessment of human health impacts. The boundary excludes areas where public access is possible (e.g. roads, residences) and does not correspond with the legal boundary of the property.

Source: SESPE 2013

0 1,900 3,800
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Figure 3.2-2
Boundary Run - Particulate Matter

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TABLE 3.2-10
LONG-TERM OPERATIONAL EMISSIONS (MITIGATED)

Source	Emissions (tons/year)*						
	ROG	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$	Lead
Proposed Project (contribution beyond current baseline conditions)	1.0	12.5	3.4	0.0	-3.9	1.7	0.0
MDAQMD Potentially Significant Impact Threshold	25 tons/year	25 tons/year	100 tons/year	25 tons/year	15 tons/year	15 tons/year	0.6 tons/year
Exceed MDAQMD Threshold?	**No**	**No**	**No**	**No**	**No**	**No**	**No**

Source: EIR Appendix C, Sespe 2013, p. 34
*Notes: *These emissions are based on a total of 680,000 tons of crushed ore to the processing plant per year all coming from the proposed project and used as a worst-case scenario, if the Butterfield/Sentinel quarries are no longer producing ore. A total of 680,000 tons is used as this is the maximum production capacity at the processing plant. However, the crushed ore to the processing plant for the proposed project is expected to average 222,500 tons per year. Mitigation measures presented in MM 3.2.1 reduce emissions below the MDAQMD thresholds as determined using methods discussed under the Methodology section above.*

As shown, implementation of mitigation measure **MM 3.2.1** would reduce PM_{10} emissions by 3.9 tons less than current operations. This is because in addition to the mitigation, the project would allow up to the maximum production rate to be extracted exclusively from the White Knob/White Ridge Quarries, resulting in no material being quarried at the Butterfield/Sentinel Quarries. The lack of any material being quarried at the Butterfield/Sentinel Quarries as a result of the project would result in a reduction of PM_{10} emissions. PM_{10} emissions would be reduced to levels below the significance threshold, and this impact is **less than significant**.

As identified in **Table 3.2-3**, the Basin is listed as federal nonattainment for ozone and PM_{10} and state nonattainment for ozone, PM_{10}, and $PM_{2.5}$. Ozone is a health threat to persons who already suffer from respiratory diseases and can cause severe ear, nose and throat irritation and increases susceptibility to respiratory infections. Particulate matter can adversely affect the human respiratory system. As shown in **Table 3.2-10**, the proposed project would result in increased emissions of ozone and $PM_{2.5}$, however, the correlation between a project's emissions and increases in nonattainment days, or frequency or severity of related illnesses, cannot be accurately quantified.

The overall strategy for reducing air pollution and related health effects in the Air District is contained in the MDAQMD Air Quality Management Plans (AQMPs). The AQMPs provides control measures that reduce emissions to attain federal ambient air quality standards by their applicable deadlines such as the application of available cleaner technologies, best management practices, incentive programs, as well as development and implementation of zero- and near-zero technologies and control methods. The CEQA thresholds of significance established by the air district are designed to meet the objectives of the AQMPs and in doing so achieve attainment status with state and federal standards. As noted above, the project would increase the emission of these pollutants, but would not exceed the thresholds of significance established by the air district for purposes of reducing air pollution and its deleterious health effects. Therefore, this impact would be considered **less than significant**.

Conflict with MDAQMD Air Quality Management Plans (Standard of Significance 2)

Impact 3.2.2 Implementation of the proposed project would not conflict with or obstruct implementation of MDAQMD air quality attainment plans. This impact is considered to be **less than significant**.

As part of its enforcement responsibilities, the EPA requires each state with nonattainment areas to prepare and submit a State Implementation Plan 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 in nonattainment areas, using a combination of performance standards and market-based programs. Similarly, under state law, the California Clean Air Act requires an air quality attainment plan to be prepared for areas designated as nonattainment with regard to the federal and state ambient air quality standards. Air quality attainment plans outline emissions limits and control measures to achieve and maintain these standards by the earliest practical date.

As previously mentioned, the project site is located within the Mojave Desert Air Basin, which is under the jurisdiction of the MDAQMD. The MDAQMD is required, pursuant to the federal Clean Air Act, to reduce emissions of criteria pollutants for which the air basin is in nonattainment. In order to reduce such emissions, the MDAQMD adopts and enforces rules and regulations concerning sources of air pollution, issues permits for stationary sources of air pollution, monitors ambient air quality and meteorological conditions, and implements programs and regulations required by the federal Clean Air Act and Clean Air Act Amendments. The MDAQMD also assists CARB in preparing the State Implementation Plan by preparing Attainment Plans that demonstrate how the ambient air quality standards will be achieved. The Attainment Plans describe the rules that will be developed and other means by which the MDAQMD will manage the emissions within its jurisdiction.

A project is conforming with the MDAQMD Attainment Plans if it complies with all applicable district rules and regulations, complies with all proposed control measures that are not yet adopted from the applicable plan(s), and is consistent with the growth forecasts in the applicable plan(s) (or is directly included in the applicable plan). A project is nonconforming if it conflicts with or delays implementation of any applicable attainment or maintenance plan. Conformity with growth forecasts can be established by demonstrating that the project is consistent with the land use plan that was used to generate the growth forecast. An example of a nonconforming project would be one that increases the gross number of dwelling units, increases the number of trips, and/or increases the overall vehicle miles traveled in an affected area (relative to the applicable land use plan).

As shown in **Table 3.2-3**, the western area of the MDAB where the project is located is designated as nonattainment for federal and state ozone standards as well as for federal and state PM_{10} standards. On the basis of those attainment designations, the project would screen out of conformity analysis if:

- Ozone precursor pollutants, NOx and ROG emissions, are less than 25 tons per year each;
- PM_{10} emissions are less than 100 tons per year; and
- Emissions are less than 10 percent of the nonattainment area emissions inventory.

As shown in **Table 3.2-9**, the project emits 1.0 tons per year of ROG and 12.5 tons per year of NO_x, which are each less than the threshold of 25 tons per year. PM_{10} emissions are 37.1 tons per year, which is less than the federal conformity screening threshold of 100 tons per year.

In 2010, sources within the San Bernardino portion of the Mojave Desert Air Basin emitted NO_x and PM_{10} in the amounts of 55,125 tons per year and 43,646 tons per year, respectively. The project increment represents 0.023 percent of the NO_x emissions and 0.085 percent of the PM_{10} emissions in the region (an inventory of ROG and other pollutant emissions is not available).

Since the project would generate less than 25 tons of the ozone precursor pollutants NO_x and ROG annually and less than 100 tons of PM_{10} emissions annually, and project emissions would not exceed 10 percent of the emissions inventory within the San Bernardino portion of the MDAB, this impact is **less than significant**.

Mitigation Measures

None required.

Conflict with Federal Land Managers' Air Quality Related Values (Standard of Significance 2)

Impact 3.2.3 Implementation of the proposed project would not conflict with or obstruct Federal Land Managers' Air Quality Related Values. This impact is considered to be **less than significant**.

The federal land manager (FLM) and the federal official with direct responsibility for management of Federal Class I parks and wilderness areas (i.e., park superintendent, refuge manager, forest supervisor) have an affirmative responsibility to protect the air quality–related values (AQRVs) (including visibility) of such lands and to consider whether a proposed project with emissions exceeding the "major" source thresholds will have an adverse impact on such values. The FLM's decision regarding whether there is an adverse impact is then conveyed to the permitting authority for consideration in its determinations regarding the permit. The permitting authority's determinations generally consider a wide range of factors, including the potential impact of the new source or major modification on the AQRVs of Class I areas, if applicable.

At the request of both state permitting agencies and permit applicants, the FLMs formed the Federal Land Managers' Air Quality Related Values Work Group (FLAG) to provide better consistency pertaining to their role in the review of new source permit applications near federal Class I areas. The purpose of FLAG is twofold: (1) to develop a more consistent and objective approach for the FLMs to evaluate air pollution effects on public AQRVs in Class I areas, including a process to identify those resources and any potential adverse impacts, and (2) to provide state permitting authorities and potential permit applicants consistency on how to assess the impacts of new and existing sources on AQRVs in Class I areas.

The FLMs are also concerned about resources in Class II parks and wilderness areas because they have other mandates to protect those areas as well. The information and procedures outlined in the FLAG report are generally applicable to evaluating the effect of new or modified sources on the AQRVs in both Class I and Class II areas.

The FLAG 2010 Phase I Report update recommends how to evaluate visibility, ozone phytotoxicity, and deposition impacts from new or modified sources. The FLAG Phase I Report recommends that an applicant apply the "Q/D test" for sources greater than 50 kilometers from

a Class I area to determine whether or not any further analysis is necessary. The Q/D test sums emissions of SO_2, NOx, PM_{10}, and sulfuric acid (H_2SO_4) (i.e., Q in tons per year) and then divides that total by the distance between the source and receptor (D in kilometers). Results equal to or less than 10 do not require further assessment (i.e., $Q/D \leq 10$).

The FLM AQRVs apply to new or modified major sources and are generally used for Prevention Significant Deterioration (PSD) permitting under the Clean Air Act. The project does not propose a new stationary major source or a modified stationary major source that would require a permit under the Clean Air Act. Fugitive area source emissions and vehicular emissions are excluded from determining whether the quarry is a major source. The Omya facility is not considered a major source as evidenced by the fact that it holds local district operating permits rather than a federal operating permit under Title V (40 CFR Part 70). Thus, none of the sources operated by Omya are capable of producing effects that would trigger concerns with the AQRVs.

The incremental change in emissions from all of the sources combined would slightly exceed major source criteria, but the effects are dispersed along roads and within pits. Thus, it is unlikely that the change in emissions will cause or contribute to effects addressed by the AQRVs. Using the FLAG report equation (Quantity/Distance <10, or Q/D <10), projects can screen out of detailed analyses of AQRVs. Application of the equation is limited in the FLAG report to projects greater than 50 kilometers from a Class I Wilderness Area. The project is within 23 kilometers of San Gorgonio, but the Q/D test is applied here for disclosure purposes and to acknowledge the scale of emissions from the project as compared to the screening threshold. Presumably sufficient buffer between the project Q/D and the screening threshold would be evidence indicating less than significant effects on AQRVs regardless of the distance.

Using the Q/D test to sum SO_2, NOx, PM_{10}, and H_2SO_4 emissions, It was determined that the project emits 53.2 tons per year of these pollutants. Dividing this by 23 kilometers (the distance to San Gorgonio) the Q/D for the project is 2.3, which is a quarter of the screening threshold. Given the fact that there is no single major source and that the emissions are distributed over a large area, the project will result in **less than significant** impacts on AQRVs at Class I Wilderness Areas.

Moreover, monitoring performed in the San Gorgonio Wilderness Area indicates that nitrates, organic matter, and sulfates have the strongest contributions to degrading visibility on the worst days (EIR Appendix C, Sespe 2013, p. 35). Concentrations of these pollutants result from regional sources and particularly emissions from the South Coast Air Basin (SCAB). The project emits NO_x, some of which may become nitrates, but the relative amount as compared to the SCAB is negligible. The project also emits particulate matter, but the worst days are relatively unaffected by particulates. Thus, the project would not emit pollutants in amounts that would affect visibility in the San Gorgonio and other nearby Class I Wilderness Areas. The project's impact on visibility and regional haze is considered to be **less than significant**.

Phytotoxic ozone concentrations may result where the plume from a large combustion source travels relatively intact a sufficient distance for the photochemical reaction between NO_x and ROG to have occurred and produce ozone. The ozone would then be concentrated at a hot spot where vegetation could be affected. The project sources of NO_x are small and distributed over a large area. Therefore, the project would not cause phytotoxic ozone concentrations, and the project impact for this AQRV is considered **less than significant**.

The deposition AQRV is concerned with the acidification of water bodies. Specifically, sulfur and nitrogen compounds cause sensitive freshwater lakes and streams to lose acid-neutralizing capacity and sensitive soils to become acidified. Other ecosystems, including the forest, may exhibit fertilization and other effects from excess nitrogen deposition. The project sources of

nitrogen and sulfur are small and distributed over a large area. Therefore, the project would not cause acidification, and the project impact for this AQRV is considered **less than significant**.

Mitigation Measures

None required.

Exposure of Sensitive Receptors to Localized Criteria Pollutants (Standard of Significance 3)

Impact 3.2.4 Implementation of the proposed project would exceed applicable localized criteria pollutant significance thresholds and potentially increase the exposure of existing sensitive land uses to pollutant concentrations. As a result, this impact is considered **potentially significant**.

Project emissions have the potential to create localized "hot spots" if, when summed with existing ambient concentrations, they result in concentrations greater than the applicable ambient air quality standard. The main criteria pollutants of concern for the project are total suspended particulates (used for deposition modeling), PM_{10}, and $PM_{2.5}$. Ambient air quality standards for pollutants that are less of a concern are discussed first, followed by modeling results for the criteria pollutants of concern.

Carbon monoxide AAQS exceedance is generally a concern at high volume vehicular intersections in urban areas that operate at level of service (LOS) D or worse and where CO is emitted into partially or completely enclosed spaces such as parking structures and garages. CO modeling is not warranted for the project, and the impact on carbon monoxide ambient air quality standards is considered **less than significant**.

Sulfur dioxide AAQS exceedances are normally a concern for facilities that burn coal or refine petroleum. Diesel fuel used by the project would meet CARB specifications for sulfur content. SO_2 modeling is not warranted for the project, and the impact on sulfur dioxide ambient air quality standards is considered **less than significant**.

Nitrogen dioxide AAQS exceedances are normally a concern for facilities with a large combustion source. The quarrying and transportation of materials is performed by diesel engines, which are a source of NO_2. However, the diesel vehicles are comparatively small emitters of NO_2, and they move in order to perform job tasks. Movement reduces the likelihood of a hot spot. NO_2 has annual and hourly ambient air quality standards. On an annual basis, the project NO_x emissions are less than the CEQA significance threshold. Therefore, modeling to determine annual NO_2 concentration for comparison to the AAQS is not warranted. On an hourly basis, the project does not propose to change the equipment list compared with existing conditions. The potential for the project to cause or contribute to an exceedance of the hourly nitrogen dioxide AAQS is unlikely given the size of the operational area (335.1 acres), the distance from the quarries where activity is expected to be most intense to the boundary at which human health impacts are evaluated, and the limited potential increase in hourly activity at any one location on-site. Therefore, modeling hourly NO_2 concentrations is not warranted for the project, and the impact on nitrogen dioxide ambient air quality standards is considered **less than significant**.

Emissions of the criteria pollutants of concern for the project (i.e., PM_{10}, $PM_{2.5}$) are modeled to predict concentrations at the off-site point of maximum impact (PMI). **Table 3.2-11** shows impact assessment results for the particulate matter air dispersion model that was prepared. Ambient air quality standards are applied when background is less than the AAQS, and significant impact levels are applied when background already exceeds the AAQS. A significant impact is when

the project exceeds the AAQS. A cumulatively considerable impact occurs when the cumulative concentration exceeds the AAQS or the project concentration exceeds the SIL in an area where the ambient air quality standards are exceeded by background concentrations.

TABLE 3.2-11
INCREMENT IN CONCENTRATION AT POINT OF MAXIMUM IMPACT (UNMITIGATED)

	PM_{10} – 24-Hour	PM_{10} – Annual	$PM_{2.5}$ – 24-Hour	$PM_{2.5}$ – Annual
10-Year Maximum Background	93 μg	25 μg	30.6 μg	10.6 μg
Cumulative Concentration	106.1 μg	28.5 μg	34.3 μg	11.1 μg
5-Year Maximum Project Concentration	13.1 μg	3.54 μg	3.7 μg	0.48 μg
Most Stringent AAQS/ SIL	50 μg / 10.4 μg	20 μg / 2.08 μg	35 μg / 2.5 μg	12 μg / 0.63 μg
Exceed AAQS?	No	No	No	No
Exceed SIL?	Yes	Yes	Yes	No

Source: EIR Appendix C, Sespe 2013, p. 37

Note: Annual average PMI occurs where the haul road crosses the project boundary (UTM 499604.71, 3803971.15), which is omitted from consideration in favor of the higher of the two adjacent boundary receptors (UTM 499559.62, 3803991.54). Daily PMI occurs on the southwest property boundary (UTM 4980909, 3801590).

Results of criteria pollutant modeling show that the project would not exceed the AAQS but may increase pollutant concentrations above the significant impact levels (SIL). The SILs represent the amount that is cumulatively considerable and are applied as the significance thresholds. An exception is the $PM_{2.5}$ annual SIL, which is not exceeded by the project. The exceedances are because of bulldozing and grading.

Mitigation Measures

Implementation of mitigation measure **MM 3.2.1** would reduce PM_{10} emissions as shown in **Table 3.2-12** below significance thresholds resulting in a **less than significant** impact.

TABLE 3.2-12
INCREMENT IN CONCENTRATION AT POINT OF MAXIMUM IMPACT (MITIGATED – MM 3.2.1)

	PM_{10} – 24-Hour	PM_{10} – Annual	$PM_{2.5}$ – 24-Hour	$PM_{2.5}$ – Annual
10-Year Maximum Background	93 μg	25 μg	30.6 μg	10.6 μg
Cumulative Concentration	100.7 μg	26.7 μg	32.73 μg	10.9 μg
5-Year Maximum Project Concentration	7.7 μg	1.72 μg	2.14 μg	0.31 μg
Most Stringent AAQS/SIL	50 μg / 10.4 μg	20 μg / 2.08 μg	35 μg / 2.5 μg	12 μg / 0.63 μg
Exceed AAQS?	No	No	No	No
Exceed SIL?	No	No	No	No

Source: EIR Appendix C, Sespe 2013, p. 38

Note: Annual average PMI occurs where the haul road crosses the project boundary (UTM 499604.71, 3803971.15), which is omitted from consideration in favor of the higher of the two adjacent boundary receptors (UTM 499559.62, 3803991.54). Daily PMI occurs on the southwest property boundary (UTM 4980909, 3801590).

Exposure of Sensitive Receptors to Toxic Air Contaminant Pollutant Concentrations (Standard of Significance 3)

Impact 3.2.5 Implementation of the proposed project would not result in increased exposure of existing sensitive land uses to TACs that would exceed applicable standards. As a result, this impact is considered **less than significant**.

Sensitive land uses are defined as facilities or land uses that include members of the population which are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples of these sensitive receptors are residences, schools, hospitals, and daycare centers. CARB has identified the following groups of individuals as the most likely to be affected by air pollution: the elderly over 65, children under 14, and persons with cardiovascular and chronic respiratory diseases such as asthma, emphysema, and bronchitis. The proposed project is not considered a sensitive land use and would not be staffed by or service the population groups most likely to be affected by air toxics.

However, the proposed project would involve many heavy-duty truck trips on-site daily and thus diesel PM emissions, described as a TAC above, and therefore could adversely affect sensitive land uses in the vicinity of the project.

Constituents in diesel exhaust and dust emissions were speciated into toxic components using the following CARB speciation profiles:

- Particulate matter from unpaved roads (PM Profile #470)
- Particulate matter from paved roads (PM Profile #471)
- Particulate matter from aggregate processing (PM Profile #90013)
- Diesel particulate matter (PM Profile #6139 for the 2013 fleet)
- Diesel total organic gases (Organic Profile #818)

TACs emitted from project operations consist mainly of those found in vehicle exhaust and, to a lesser extent, trace amounts of metals and silica found in fugitive dust. **Table 3.2-13** presents the health risk predicted at nearby receptors.

TABLE 3.2-13
POTENTIAL HEALTH RISK IMPACTS

Receptor Number	Cancer Risk[1]	Chronic Non-Cancer Risk (H.I.)	Acute Non-Cancer Risk (H.I.)	Significant?
R1	0.54	0.05	0.09	No
R2	1.49	0.12	0.17	No
R3	3.08	0.17	0.24	No
R4	-0.47	0.02	0.05	No
R5	1.71	0.08	0.09	No
R6	-0.14	0.003	0.01	No
R7	0.54	0.05	0.11	No

Source: EIR Appendix C, Sespe 2013, p. 37
Notes: [1] Excess cancer cases per million people exposed and hazard index (H.I.).

As shown in **Table 3.2-13**, health risk impacts from the project are **less than significant**. (See Figure 6 through Figure 7 of **EIR Appendix C** for contoured plots of health risk for the project.)

Mitigation Measures

None required.

Result in a Cumulatively Considerable Net Increase in Nonattainment Criteria Pollutant (Standard of Significance 5)

Impact 3.2.6 Implementation of the proposed project and mitigation measure **MM 3.2.1**, in combination with cumulative development in the Mojave Desert Air Basin, would result in a cumulatively considerable net increase of criteria air pollutants for which the MDAB is designated nonattainment. This is considered a **less than cumulatively considerable** impact.

The MDAQMD's approach to assessing cumulative impacts is based on whether a proposed project will result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations. As evaluated under Impact 3.2.1, the project would not exceed long-term operational standards with implementation of mitigation measure MM 3.2.1 and therefore would not violate air quality standards. Thus, the project would result in **less than cumulatively considerable** impacts.

Mitigation Measures

None required.