IV. ENVIRONMENTAL IMPACT ANALYSIS
C. AIR QUALITY

INTRODUCTION

The Town of Mammoth Lakes (Town) is located within the Great Basin Unified Air Pollution Control District (GBUAPCD or District). Air pollutant emissions within the District are generated by stationary and mobile sources. Stationary sources can be divided into two major subcategories: point and area sources. Point sources occur at an identified location and are usually associated with manufacturing and industry. Examples are boilers or combustion equipment that produces electricity or generates heat. Area sources are widely distributed and produce many small emissions. Examples of area sources include residential and commercial water heaters, painting operations, lawn mowers, agricultural fields, landfills, and consumer products such as barbeque lighter fluid and hair spray. Mobile sources refer to emissions from motor vehicles, including tailpipe and evaporative emissions, and are classified as either on-road or off-road. On-road sources may be legally operated on roadways and highways. Off-road sources include aircraft, ships, trains, racecars, and self-propelled construction equipment. Air pollutants can also be generated by the natural environment such as when fine dust particles are pulled off the ground surface and suspended in the air during high winds.

Both the Federal and State governments have established ambient air quality standards for outdoor concentrations of various pollutants in order to protect public health and welfare. These pollutants are referred to as "criteria air pollutants" as a result of the specific standards, or criteria that have been adopted for them. The national and State standards have been set at levels considered safe to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly with a margin of safety; and to protect public welfare, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.

The criteria air pollutants which are most relevant to current air quality planning and regulation in the District include ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), respirable particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), sulfur dioxide (SO_2), and lead. In addition, toxic air contaminants and greenhouse gas (GHG) emissions are of concern in the Great Basin Valley Air Basin (GBVAB or Basin). Each of these is briefly described below.

- *Ozone (O_3)* is a gas that is formed when volatile organic compounds (VOCs) and nitrogen oxides (NO_x)—both by products of internal combustion engine exhaust—undergo slow photochemical reactions in the presence of sunlight. Ozone concentrations are generally highest during the summer months when direct sunlight, light wind, and warm temperature conditions are favorable.
- *Carbon Monoxide (CO)* is a colorless, odorless gas produced by the incomplete combustion of fuels. Carbon monoxide concentrations tend to be the highest during the winter morning, with little to no wind, when surface-based inversions trap the pollutant at ground levels. Because CO is emitted directly from internal combustion engines—unlike O_3—and motor vehicles operating

at slow speeds are the primary source of CO in the Basin, the highest ambient CO concentrations are generally found near congested transportation corridors and intersections.

- *Respirable Particulate Matter (PM_{10})* and *Fine Particulate Matter ($PM_{2.5}$)* consist of extremely small, suspended particles or droplets 10 microns and 2.5 microns or smaller in diameter. Some sources of particulate matter, like pollen and windstorms, are naturally occurring. However, in populated areas, most particulate matter is caused by road dust, diesel soot, combustion products, abrasion of tires and brakes, and construction activities.
- *Nitrogen dioxide (NO_2)* is a by product of fuel combustion. The principal form of nitrogen oxide produced by combustion is nitric oxide (NO), which reacts quickly to form NO_2, creating the mixture of NO and NO_2 commonly called NO_x (nitrogen oxides). Nitrogen dioxide absorbs blue light and result is a brownish-red cast to the atmosphere and reduced visibility. Nitrogen dioxide also contributes to the formation of PM_{10}.
- *Sulfur dioxide (SO_2)* is a colorless, extremely irritating gas or liquid. It enters the atmosphere as a pollutant mainly as a result of burning high sulfur-content fuel oils and coal, and from chemical processes occurring at chemical plants and refineries.
- *Lead* occurs in the atmosphere as particulate matter. The combustion of leaded gasoline used to be the primary source of airborne lead in the Basin, although the use of leaded gasoline is no longer permitted for on-road motor vehicles. Today the primary sources of airborne lead pollution include the manufacturing and recycling of batteries, paint, ink, ceramics, ammunition, and secondary lead smelters.
- *Toxic Air Contaminants (TAC)* refer to a diverse group of "non-criteria" air pollutants that can affect human health, but have not had ambient air quality standards established for them. This is not because they are fundamentally different from the pollutants discussed above, but because their effects tend to be local rather than regional. There are hundreds of toxic air contaminants and exposure to these pollutants can cause or contribute to cancer, birth defects, genetic damage, and other adverse health effects.
- *Greenhouse Gas (GHG) Emissions* refer to a group of emissions that are believed to affect global climate conditions. Simply put, the greenhouse effect compares the Earth and the atmosphere surrounding it to a greenhouse with glass panes. The glass panes in a greenhouse let heat from sunlight in and reduce the amount of heat that escapes. Greenhouse gases such as carbon dioxide (CO_2), methane, and nitrous oxide keep the average surface temperature of the Earth close to a hospitable 60 degrees Fahrenheit. Without the greenhouse effect, the Earth would be a frozen globe with an average surface temperature of about 5 degrees Fahrenheit.

Health Effects of Air Pollutants

The health effects of the criteria pollutants (i.e., ozone, carbon monoxide, fine suspended particulate matter, nitrogen dioxide, sulfur dioxide, and lead) and toxic air contaminants are described below:[1]

Ozone (O_3)

Individuals exercising outdoors, children and people with preexisting lung disease such as asthma and chronic pulmonary lung disease are considered to be the most susceptible sub-groups for O_3 effects. Short-term exposures (lasting for a few hours) to O_3 at levels typically observed in California can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes. Elevated ozone levels are associated with increased school absences. In recent years, a correlation between elevated ambient ozone levels and increases in daily hospital admission rates, as well as mortality, has also been reported. An increased risk for asthma has been found in children who participate in multiple sports and live in high ozone communities.

Ozone exposure under exercising conditions is known to increase the severity of the above mentioned observed responses. Animal studies suggest that exposures to a combination of pollutants that include ozone may be more toxic than exposure to O_3 alone. Although lung volume and resistance changes observed after a single exposure diminish with repeated exposures, biochemical and cellular changes appear to persist, which can lead to subsequent lung structural changes.

Carbon Monoxide (CO)

Individuals with a deficient blood supply to the heart are the most susceptible to the adverse effects of CO exposure. The effects observed include earlier onset of chest pain with exercise, and electrocardiograph changes indicative of worsening oxygen supply to the heart.

Inhaled CO has no direct toxic effect on the lungs, but exerts its effect on tissues by interfering with oxygen transport by competing with oxygen to combine with hemoglobin present in the blood to form carboxyhemoglobin (COHb). Hence, conditions with an increased demand for oxygen supply can be adversely affected by exposure to CO. Individuals most at risk include patients with diseases involving heart and blood vessels, fetuses, and patients with chronic hypoxemia (oxygen deficiency) as seen in high altitudes.

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[1] *The descriptions of the health effects of the criteria pollutants are taken from Appendix C (Health Effects of Ambient Air Pollutants) of SCAQMD's "Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning" document.*

Reduction in birth weight and impaired neurobehavioral development has been observed in animals chronically exposed to CO resulting in COHb levels similar to those observed in smokers. Recent studies have found increased risks for adverse birth outcomes with exposure to elevated CO levels. These include pre-term births and heart abnormalities. Additional research is needed to confirm these results.

Particulate Matter (PM_{10} and $PM_{2.5}$)

A consistent correlation between elevated ambient fine particulate matter (PM_{10} and $PM_{2.5}$) levels and an increase in mortality rates, respiratory infections, number and severity of asthma attacks and the number of hospital admissions has been observed in different parts of the United States and various areas around the world. In recent years, some studies have reported an association between long-term exposure to air pollution dominated by fine particles and increased mortality, reduction in life-span, and an increased mortality from lung cancer.

Daily fluctuations in fine particulate matter concentration levels have also been related to hospital admissions for acute respiratory conditions in children, to school and kindergarten absences, to a decrease in respiratory lung volumes in normal children and to increased medication use in children and adults with asthma. Recent studies show lung function growth in children is reduced with long-term exposure to particulate matter.

The elderly, people with pre-existing respiratory or cardiovascular disease and children appear to be more susceptible to the effects of PM_{10} and $PM_{2.5}$.

Nitrogen Dioxide (NO_2)

Population-based studies suggest that an increase in acute respiratory illness, including infections and respiratory symptoms in children (not infants), is associated with long-term exposures to NO_2 at levels found in homes with gas stoves, which are higher than ambient levels found in Southern California. Increase in resistance to air flow and airway contraction is observed after short-term exposure to NO_2 in healthy subjects. Larger decreases in lung functions are observed in individuals with asthma or chronic obstructive pulmonary disease (e.g., chronic bronchitis, emphysema) than in healthy individuals, indicating a greater susceptibility of these sub-groups.

In animals, exposure to levels of NO_2 considerably higher than ambient concentrations results in increased susceptibility to infections, possibly due to the observed changes in cells involved in maintaining immune functions. The severity of lung tissue damage associated with high levels of ozone exposure increases when animals are exposed to a combination of O_3 and NO_2.

Sulfur Dioxide (SO_2)

A few minutes exposure to low levels of SO_2 can result in airway constriction in some asthmatics, all of whom are sensitive to its effects. In asthmatics, increase in resistance to air flow, as well as reduction in breathing capacity leading to severe breathing difficulties, are observed after acute exposure to SO_2. In contrast, healthy individuals do not exhibit similar acute responses even after exposure to higher concentrations of SO_2.

Animal studies suggest that despite SO_2 being a respiratory irritant, it does not cause substantial lung injury at ambient concentrations. However, very high levels of exposure can cause lung edema (fluid accumulation), lung tissue damage, and sloughing off of cells lining the respiratory tract.

Some population-based studies indicate that the mortality and morbidity effects associated with fine particles show a similar association with ambient SO_2 levels. In these studies, efforts to separate the effects of SO_2 from those of fine particles have not been successful. It is not clear whether the two pollutants act synergistically or one pollutant alone is the predominant factor.

Sulfates (SO_4)

Most of the health effects associated with fine particles and SO_2 at ambient levels are also associated with SO_4. Thus, both mortality and morbidity effects have been observed with an increase in ambient SO_4 concentrations. However, efforts to separate the effects of SO_4 from the effects of other pollutants have generally not been successful.

Clinical studies of asthmatics exposed to sulfuric acid suggest that adolescent asthmatics are possibly a subgroup susceptible to acid aerosol exposure. Animal studies suggest that acidic particles such as sulfuric acid aerosol and ammonium bisulfate are more toxic than non-acidic particles like ammonium sulfate. Whether the effects are attributable to acidity or to particles remains unresolved.

Lead

Fetuses, infants, and children are more sensitive than others to the adverse effects of lead exposure. Exposure to low levels of lead can adversely affect the development and function of the central nervous system, leading to learning disorders, distractibility, inability to follow simple commands, and lower intelligence quotient. In adults, increased lead levels are associated with increased blood pressure.

Lead poisoning can cause anemia, lethargy, seizures and death. It appears that there are no direct effects of lead on the respiratory system. Lead can be stored in the bone from early-age environmental exposure, and elevated blood lead levels can occur due to breakdown of bone tissue during pregnancy, hyperthyroidism (increased secretion of hormones from the thyroid gland) and osteoporosis (breakdown of bony tissue). Fetuses and breast-fed babies can be exposed to higher levels of lead because of previous environmental lead exposure of their mothers.

Toxic Air Contaminants (TACs)

Toxic Air Contaminants (TACs) are a broad class of compounds known to cause or contribute to cancer or non-cancer health effects such as birth defects, genetic damage, and other adverse health effects. As discussed previously, effects from TACs may be both chronic and acute on human health. Acute health effects are attributable to sudden exposure to high quantities of air toxics. These effects include nausea, skin irritation, respiratory illness, and, in some cases, death. Chronic health effects result from low-dose long-term exposure from routine releases of air toxics. The effect of major concern for this type of exposure is cancer, which requires a period of 10-30 years after exposure to develop.[2]

TACs are found in ambient air, especially in urban areas, and are caused by industry, agriculture, fuel combustion, and commercial operations (e.g., dry cleaners). TACs are typically found in low concentrations, even near their source (e.g., benzene near a freeway). Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, state, and federal level.

Diesel exhaust is the predominant TAC in urban air and is estimated to represent about two-thirds of the cancer risk from TACs (based on the statewide average).[3] According to the California Air Resources Board (CARB), diesel exhaust is a complex mixture of gases, vapors and fine particles. This complexity makes the evaluation of health effects of diesel exhaust a complex scientific issue. Some of the chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by the CARB, and are listed as carcinogens either under the State's Proposition 65 or under the federal Hazardous Air Pollutants programs. California has adopted a comprehensive diesel risk reduction program. The United States Environmental Protection Agency (U.S. EPA) has adopted low sulfur diesel fuel standards that will reduce diesel particulate matter substantially. These went into effect in June 2006.

Greenhouse Gas (GHG) Emissions

The issue of global climate change alleged to be caused by greenhouse gases (GHG) is currently one of the most important and widely debated scientific, economic, and political issues in the United States. Climate change is a shift in the "average weather" that a given region experiences. This is measured by changes in temperature, wind patterns, precipitation, and storms, including the potential for more extreme or more frequent severe weather conditions. While the effects of global climate change may occur on a global, regional, or local basis, the impacts are believed to result from changes in the global climate of the Earth as a whole (i.e., an increase in the concentration of certain gases in the atmosphere commonly referred to as "greenhouse gases"). Global climate can occur naturally, as in the case of an ice age.

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[2] *California Air Resources Board (CARB), Air Quality Analysis Guidance Handbook, Chapter 3 (Basic Air Quality Information), http://www.aqmd.gov/ceqa/handbook/CH3_rev.doc, accessed July 14, 2006.*

[3] *South Coast Air Quality Management District (SCAQMD), Air Toxics Control Plan, http://www.aqmd.gov/aqmp/docs/AirToxicsControlPlan.pdf, accessed July 14, 2006.*

Some believe and some data support the conclusion that substantial changes in the global climate have occurred in the past (particularly on a geologic time scale of thousands or millions of years). The issue of global climate change differs from the previous shifts in that the changes that are believed to be occurring today are believed by some to be occurring at a more rapid rate and magnitude. Gases that trap heat in the atmosphere are often called greenhouse gases. The Earth's surface temperature would be about 61° F colder than it is now if it were not for the natural heat trapping effect of greenhouse gases. The increased accumulation of these gases in the Earth's atmosphere over the last 200 years is considered the cause of the observed increase in the Earth's temperature (global warming). Greenhouse gases consist of water vapor, carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Some greenhouse gases such as carbon dioxide are emitted to the atmosphere through natural processes and human activities. Other greenhouse gases (e.g., fluorinated gases) are created and emitted solely through human activities.

Scientists have shown that the concentration of these gases in the atmosphere can impact temperature by "trapping" heat within the Earth's atmosphere because these greenhouse gases absorb longwave radiation emitting from the Earth's surface; therefore, an increase in the concentration of greenhouse gases will result in a corresponding increase in the amount of radiation contained within the Earth's atmosphere. Oxygen and nitrogen, the primary components of the Earth's atmosphere, do not absorb longwave radiation.

Based on the potential increase in longwave radiation contained within the atmosphere (the so-called "greenhouse effect"), some believe that the accumulation of these gases in the Earth's atmosphere is the cause of the observed increase in the Earth's temperature (global warming) over recent decades.

Global Warming Potential (GWP)

Greenhouse gases have varying global warming potential (GWP). The GWP is the potential of a gas or aerosol to trap heat in the atmosphere; it is the "cumulative radiative forcing effects of a gas over a specified time horizon resulting from the emission of a unit mass of gas relative to a reference gas."[4] One teragram of carbon dioxide equivalent (Tg CO_2 Eq.) is essentially the emissions of the gas multiplied by the GWP. One teragram is equal to one million metric tons. The carbon dioxide equivalent is a good way to assess emissions because it gives weight to the GWP of the gas. A summary of the atmospheric lifetime and GWP of selected gases is summarized in Table IV.C-1. As shown in the table, GWP ranges from 1 to 23,900.

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[4] *U.S. Environmental Protection Agency. 2006l.*

Table IV.C-1
Global Warming Potentials and Atmospheric Lifetimes

Gas	Atmospheric Lifetime (years)	Global Warming Potential (100 year time horizon)
Carbon Dioxide	50 - 200	1
Methane	12 ± 3	21
Nitrous Oxide	120	310
HFC-23	264	11,700
HFC-134a	14.6	1,300
HFC-152a	1.5	140
PFC: Tetrafluoromethane (CF_4)	50,000	6,500
PFC: Hexafluoroethane (C_2F_6)	10,000	9,200
Sulfur Hexafluoride (SF_6)	3,200	23,900
Source: U.S. Environmental Protection Agency, http://www.epa.gov/nonco2/econ-inv/table.html, updated Oct. 19, 2006.		

Inventory

An analysis of data compiled by the United Nations Framework Convention on Climate Change (UNFCCC), indicates that in 2004, total worldwide GHG emissions were 20,135 teragram of carbon dioxide equivalent (Tg CO_2 Eq.), excluding emissions/removals from land use, land use change, and forestry.[5] In 2004, the United States (U.S.) contributed the most GHG emissions (35 percent of global emissions). In 2004, total GHG emissions in the U.S. were 7,074.4 Tg CO_2 Eq., which is an increase of 15.8 percent from 1990 emissions.[6] In 2005, total U.S. GHG emissions were 7,260.4 Tg CO_2 Eq.[7] Overall, total U.S. emissions have risen by 16.3 percent from 1990 to 2005, while the U.S. gross domestic product has increased by 55 percent over the same period.[8] Emissions rose from 2004 to 2005, increasing by 0.8 percent (56.7 Tg CO_2 Eq.). The main causes of the increase: (1) strong economic growth in 2005, leading to increased demand for electricity and (2) an increase in the demand for electricity due to warmer summer conditions.[9] However, a decrease in demand for fuels due to warmer winter conditions and higher fuel prices moderated the increase in emissions.[10]

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5 *United Nations Framework Convention on Climate Change (UNFCCC), Greenhouse Gas Emissions Data, Predefined Queries, Annex I Parties - GHG total without LULUCF (land use, land-use change, and forestry), http://unfccc.int/ghg_emissions_data/predefined queries/items/3841.php, 2006.*

6 *U.S. Environmental Protection Agency (EPA), Office of Atmospheric Programs, April 2006. The U.S. Inventory of Greenhouse Gas Emissions and Sinks: Fast Facts. http://epa.gov/climatechange/emissions/downloads06/06FastFacts.*

7 *U.S. Environmental Protection Agency (EPA), Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2005, Executive Summary, April 15, 2007, USEPA #430-R-07-002. http://www.epa.gov/climatechange/emissions/downloads06/07CR.pdf, ES-4.*

8 *Ibid.*

9 *Ibid.*

10 *Ibid.*

California is a substantial contributor of global greenhouse gases as it is the second largest contributor in the U.S. and the twelfth to sixteenth largest in the world.[11] During 1990 to 2003, California's gross state product grew 83 percent while GHG emissions grew 12 percent. While California has a high amount of GHG emissions, it has low emissions per capita. In 2004, California produced 492 Tg CO_2 Eq.[12], which is approximately seven percent of U.S. emissions. The major source of GHG in California is transportation, contributing 41 percent of the state's total GHG emissions.[13] Electricity generation is the second largest generator, contributing 22 percent of the state's GHG emissions.

Emissions from fuel use in the commercial and residential sectors in California decreased 9.7 percent over the 1990 to 2004 period.[14] According to the California Energy Commission (CEC), the decrease in greenhouse gases demonstrates the efficacy of energy conservation in buildings (Title 24 requirements) and appliances. The new 2005 Title 24 Standards will further reduce greenhouse gas emissions. The decrease in greenhouse gases attributed to these sources is even more substantial when the population increase in California is considered.

Currently, there is no known GHG emission data for the Great Basin Unified Air Pollution Control District (GBUAPCD or District) or for the Town.

Health Effects

The potential health effects from global climate change may be from temperature increases, climate-sensitive diseases, extreme events, and air quality. There may be direct temperature effects through increases in average temperature leading to more extreme heat waves and less extreme cold spells. Those living in warmer climates are likely to experience more stress and heat-related problems. Heat related problems include heat rash and heat stroke. In addition, climate sensitive diseases may increase, such as those spread by mosquitoes and other disease carrying insects. Those diseases include malaria, dengue fever, yellow fever, and encephalitis. Extreme events such as flooding and hurricanes can displace people and agriculture, which would have negative human health consequences including the spreading of disease and death. Global climate change may also contribute to air quality problems from increased frequency of smog and particulate air pollution.[15]

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11 *California Energy Commission (CEC), December 2006, Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004 Staff Final Report, CEC-600-2006-013-SF., http://www.energy.ca.gov/2006publications/CEC-600-2006-013/CEC-600-2006-013-SF.PDF.*

12 *Ibid.*

13 *Ibid.*

14 *Ibid.*

15 *Association of Environmental Professionals, Alternative Approaches to Analyzing Greenhouse Gas Emissions and Global Climate Change in CEQA Documents (Final), June 29, 2007.*

Water Vapor

Water vapor (H_2O) is the most abundant, important, and variable greenhouse gas in the atmosphere. Water vapor is not considered a pollutant; in the atmosphere it maintains a climate necessary for life. Changes in its concentration are primarily considered to be a result of climate feedbacks related to the warming of the atmosphere rather than a direct result of industrialization.[16] The feedback loop in which water is involved is critically important to projecting future climate change. As the temperature of the atmosphere rises, more water is evaporated from ground storage (rivers, oceans, reservoirs, soil). Because the air is warmer, the relative humidity can be higher (in essence, the air is able to 'hold' more water when it is warmer), leading to more water vapor in the atmosphere. As a greenhouse gas, the higher concentration of water vapor is then able to absorb more thermal indirect energy radiated from the Earth, thus further warming the atmosphere. The warmer atmosphere can then hold more water vapor and so on and so on. This is referred to as a "positive feedback loop." The extent to which this positive feedback loop will continue is unknown as there are also dynamics that put the positive feedback loop in check. As an example, when water vapor increases in the atmosphere, more of it will eventually also condense into clouds, which are more able to reflect incoming solar radiation (thus allowing less energy to reach the Earth's surface and heat it up).

There are no health effects from water vapor. When some pollutants come in contact with water vapor, they can dissolve and then the water vapor can be a transport mechanism to enter the human body. The main source of water vapor is evaporation from the oceans (approximately 85%). Other sources include evaporation from other water bodies, sublimation (change from solid to gas) from sea ice and snow, and transpiration from plant leaves.

Carbon Dioxide

Carbon dioxide (CO_2) is an odorless, colorless natural greenhouse gas. Outdoor levels of carbon dioxide are not high enough to result in negative health effects. Current concentrations of carbon dioxide in the ambient air are about 370 parts per million (ppm). The National Institute for Occupational Safety and Health (NIOSH) reference exposure level is 5,000 ppm, averaged over 10 hours in a 40-hour workweek. The short-term reference exposure level is 30,000 ppm, averaged over 15 minutes. At those levels, potential health problems are as follows: headache, dizziness, restlessness, paresthesia; dyspnea (breathing difficulty); sweating, malaise (vague feeling of discomfort); increased heart rate, cardiac output, blood pressure; coma; asphyxia; and/or convulsions.[17]

Carbon dioxide is emitted from natural and anthropocentric (human) sources. Natural sources include the following: decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus;

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[16] *U.S. Environmental Protection Agency (EPA) 2006b.*

[17] *National Institute for Occupational Safety and Health, 2005.*

evaporation from oceans; and volcanic outgassing. Anthropogenic sources are from burning coal, oil, natural gas, and wood. In 1999, the concentration of carbon dioxide in the atmosphere was 367 ppm, which is an increase from the concentration during the Industrial Era (1750) of 280 ± 10 ppm.[18] The concentration of carbon dioxide in the atmosphere is projected to increase to a minimum of 540 ppm by 2100 as a direct result of anthropogenic sources.[19] Some predict that this will result in an average global temperature rise of at least 2° Celsius.[20] Sinks are mechanisms by which a gas or aerosol is taken out of the atmosphere. Carbon dioxide is removed from the air by photosynthesis, dissolution into ocean water, transfer to soils and ice caps, and chemical weathering of carbonate rocks.

Methane (CH_4)

Methane (CH_4) is an extremely effective absorber of radiation, though its atmospheric concentration is less than carbon dioxide and its lifetime in the atmosphere is brief (10-12 years), compared to other greenhouse gases. Methane is not toxic. The immediate health hazard is that it may cause burns if it ignites. It is highly flammable and may form explosive mixtures with air. Methane is violently reactive with oxidizers, halogens, and some halogen-containing compounds. Methane is also an asphyxiant and may displace oxygen in an enclosed space.[21]

Methane has both natural and anthropogenic sources. It is released as part of the biological processes in low oxygen environments, such as in swamplands or in rice production (at the roots of the plants). Over the last 50 years, human activities such as growing rice, raising cattle, using natural gas, and mining coal have added to the atmospheric concentration of methane.[22] Other anthropocentric sources include fossil-fuel combustion and biomass burning.

Nitrous Oxide (N_2O)

Nitrous oxide (N_2O), also known as laughing gas, is a colorless greenhouse gas. Nitrous oxide can cause dizziness, euphoria, and sometimes slight hallucinations. In small doses, it is harmless. In some cases, heavy and extended use can cause Olney's Lesions (brain damage). Concentrations of nitrous oxide also began to rise at the beginning of the industrial revolution. In 1998, the global concentration was 314 parts per billion (ppb). Nitrous oxide is produced by microbial processes in soil and water, including those reactions which occur in fertilizer containing nitrogen. In addition to agricultural sources, some industrial processes (fossil fuel-fired power plants, nylon production, nitric acid production, and vehicle emissions) also contribute to its atmospheric load.[23] It is used as an aerosol spray propellant, i.e., in whipped cream

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[18] *Intergovernmental Panel on Climate Change (IPCC), 2001, Chapter 3.*
[19] *Ibid.*
[20] *Ibid.*
[21] *Occupational Safety and Health Administration (OSHA), 2003.*
[22] *U.S. Environmental Protection Agency, 2006b.*
[23] *Ibid.*

bottles. It is also used in potato chip bags to keep chips fresh. It is used in rocket engines and in race cars. Nitrous oxide can be transported into the stratosphere, be deposited on the Earth's surface, and be converted to other compounds by chemical reaction.

Chlorofluorocarbons (CFCs)

Chlorofluorocarbons (CFCs) are gases formed synthetically by replacing all hydrogen atoms in methane or ethane (C_2H_6) with chlorine and/or fluorine atoms. CFCs are nontoxic, nonflammable, insoluble, and chemically unreactive in the troposphere (the level of air at the Earth's surface). CFCs are no longer being used; therefore, it is not likely that health effects would be experienced. Nonetheless, in confined indoor locations, working with CFC-113 or other CFCs is thought to result in death by cardiac arrhythmia (heart frequency too high or too low) or asphyxiation.[24]

CFCs have no natural source, but were first synthesized in 1928. They were used for refrigerants, aerosol propellants, and cleaning solvents. Due to the discovery that they are able to destroy stratospheric ozone, a global effort to halt their production was undertaken and was extremely successful, so much so that levels of the major CFCs are now remaining level or declining. However, their long atmospheric lifetimes mean that some of the CFCs will remain in the atmosphere for over 100 years (NOAA 2005).

Hydrofluorocarbons (HFCs)

Hydrofluorocarbons (HFCs) are synthetic man-made chemicals that are used as a substitute for CFCs. Of all the greenhouse gases, they are one of three groups with the highest global warming potential. The HFCs with the largest measured atmospheric abundances are (in order), HFC-23 (CHF_3), HFC-134a (CF_3CH_2F), and HFC-152a (CH_3CHF_2).[25] Prior to 1990, the only significant emissions were HFC-23. HFC-134a use is increasing due to its use as a refrigerant. Concentrations of HFC-23 HFC-134a are now about 10 parts per trillion (ppt) each.[26] Concentrations of HFC-152a are about 1 ppt.

Most HFCs do not have health effects associated with them. For example, 1, 1- difluoroethane (HCFC-152A), does not have any adverse health effects.[27] However, HFC-134a has a chronic inhalation exposure of 80 milligrams per cubic meter (mg/m^3); the critical effect is Leydig cell hyperplasia.[28] HFCs are man-made for applications such as automobile air conditioners and refrigerants.

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[24] *National Institute for Occupational Safety and Health, 1989.*
[25] *U.S. Environmental Protection Agency, 2006j.*
[26] *Ibid.*
[27] *U.S. Environmental Protection Agency, 1994.*
[28] *U.S. Environmental Protection Agency, 1995.*

Perfluorocarbons

Perfluorocarbons (PFCs) have stable molecular structures and do not break down though the chemical processes in the lower atmosphere. High-energy ultraviolet rays about 60 kilometers above Earth's surface are able to destroy the compounds. Because of this, PFCs have very long lifetimes, between 10,000 and 50,000 years. Two common PFCs are tetrafluoromethane (CF_4) and hexafluoroethane (C_2F_6). Measurements in 2000 estimate global concentrations of CF_4 in the stratosphere are over 70 parts per trillion (ppt).[29]

High concentrations of CF4 can cause confusion, dizziness, or headache and may cause effects on cardiovascular system, resulting in cardiac disorders.[30] The two main sources of PFCs are primary aluminum production and semiconductor manufacture.

Sulfur Hexafluoride(SF_6)

Sulfur hexafluoride (SF_6) is an inorganic, odorless, colorless, nontoxic, nonflammable gas. It also has the highest GWP of any gas evaluated, 23,900. Concentrations in the 1990s were about 4 ppt.[31] In high concentrations in confined areas, the gas presents the hazard of suffocation because it displaces the oxygen needed for breathing. Sulfur hexafluoride is used for insulation in electric power transmission and distribution equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas for leak detection.

Aerosols

Aerosols are particles emitted into the air through burning biomass (plant material) and fossil fuels. Aerosols can warm the atmosphere by absorbing and emitting heat and can cool the atmosphere by reflecting light. Cloud formation can also be affected by aerosols. The health effect of aerosols is similar to particulate matter, discussed above. Sulfate aerosols are emitted when fuel with sulfur in it is burned. Black carbon (or soot) is emitted during bio mass burning incomplete combustion of fossil fuels. Particulate matter regulation has been lowering aerosol concentrations in the United States; however, global concentrations are likely increasing greenhouse gas emissions.

If global warming occurs, ambient air quality is likely to worsen. High temperatures, strong sunlight, and a stable air mass are ideal for formation of ground-level ozone. This is damaging to plants and humans.

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29 *U.S. Environmental Protection Agency, 2006j. (EPA), High Global Warming Potential Gases. Science. http://www.epa.gov/highgwp/scientific.html, CAJA staff accessed August 20, 2007.*

30 *National Institute for Occupational Safety and Health, 1997.*

31 *U.S. Environmental Protection Agency, 2006j (EPA), High Global Warming Potential Gases. Science. http://www.epa.gov/highgwp/scientific.html, CAJA staff accessed August 20, 2007.*

In addition, rainfall patterns could change; resulting in more frequent droughts and flashfloods, and the snow pack in the Sierra Nevada, which provides much of California's water supply, could be reduced.

Regulatory Setting

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

Federal

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

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

State

The California Air Resources Board (CARB), a part of the California Environmental Protection Agency, is responsible for the coordination and administration of both federal and State air pollution control programs within California. In this capacity, the CARB conducts research, sets California Ambient Air Quality Standards, compiles emission inventories, develops suggested control measures, provides oversight of local programs, and prepares the SIP. The CARB establishes emissions standards for motor vehicles sold in California, consumer products (such as hair spray, aerosol paints, and barbecue lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions.

In August, 2006, the California Legislature adopted AB 32, the California Global Warming Solutions Act of 2006. This bill requires the CARB to adopt regulations to require the reporting and verification of statewide greenhouse gas emissions and to monitor and enforce compliance with that program. As part of this effort, the CARB will adopt a statewide greenhouse gas emissions limit equivalent to the statewide greenhouse gas emissions levels in 1990, to be achieved by 2020. The CARB will adopt rules and regulations to achieve the maximum technologically feasible and cost-effective greenhouse gas emission reductions. These are expected to include market-based compliance mechanisms. The statute would further require the CARB to monitor compliance with and enforce any rule, regulation, order, emission limitation, emissions reduction measure, or market-based compliance mechanism that it adopts. The following timeline for implementation of AB 32 was published by the CARB (September 25, 2006):

By July 1, 2007	The CARB forms Environmental Justice and Economic and Technology Advancement advisory committees.
By July 1, 2007	CARB adopts list of discrete early action measures that can be adopted and implemented before January 1, 2010.
By January 1, 2008	CARB adopts regulations for mandatory greenhouse gas emissions reporting. CARB defines 1990 baseline for California (including emissions from imported power) and adopts that as the 2020 statewide cap.
By January 1, 2009	CARB adopts plan indicating how emission reductions will be achieved from significant sources of greenhouse gases via regulations, market mechanisms and other actions.
During 2009	CARB staff drafts rule language to implement its plan and holds a series of public workshops on each measure (including market mechanisms).
By January 1, 2010	Early action measures take effect.
During 2010	CARB conducts series of rulemakings, after workshops and public hearings, to adopt greenhouse gas regulations including rules governing market mechanisms.
By January 1, 2011	CARB completes major rulemakings for reducing greenhouse gases including market mechanisms. CARB may revise the rules and adopt new ones after 1/1/2011 in furtherance of the 2020 cap.
By January 1, 2012	Greenhouse gas rules and market mechanisms adopted by CARB take effect and are legally enforceable.
December 31, 2020	Deadline for achieving 2020 greenhouse gas emissions cap.

In October 2006, the Governor issued an Executive Order in which he designated the California Environmental Protection Agency Secretary with the primary responsibility for implementing AB 32 (rather than providing the CARB with unfettered discretion as the law required). In late December, the Governor announced the members of a blue-ribbon Market Advisory Committee board to devise approaches to develop a market for carbon trading. More developments are likely as the Governor and the Legislature determine who has primary responsibility for implementation and the relationship between regulations and market-based mechanisms. Because the intent of AB 32 is to limit 2020 emissions to the equivalent of 1990 levels, and the present year (2007) is near the midpoint of this timeframe, it is expected that the regulations would affect many existing sources of greenhouse and not just new general development projects.

Regional

The Great Basin Unified Air Pollution Control District (GBUAPCD) is the agency principally responsible for comprehensive air pollution control in the Basin. To that end, the GBUAPCD, a regional agency, works directly with county transportation commissions, and local governments, and cooperates actively with all State and federal government agencies. The GBUAPCD develops rules and regulations, establishes permitting requirements, inspects emissions sources, and provides regulatory enforcement through such measures as educational programs or fines, when necessary. Although the GBUAPCD is responsible for regional air quality planning efforts, it does not have the authority to directly regulate the air quality issues associated with plans and new development projects within the Basin.

National and State Ambient Air Quality Standards

As required by the Federal CAA, the National Ambient Air Quality Standards (NAAQS) have been established for six major air pollutants: carbon monoxide (CO), nitrogen oxides (NO_x), ozone (O_3), respirable particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), sulfur oxides (SO_2), and lead. The California Ambient Air Quality Standards (CAAQS) apply to these same six criteria. The California CAA standards are more stringent than the Federal standards and, in the case of PM_{10} and SO_2, far more stringent. Federal and State standards are summarized in Table IV.C-2. Federal and State standards for these pollutants establish upper limits that protect all segments of the population, including those most susceptible to the pollutants' adverse effects (e.g., children, the elderly, people weak from illness or disease, or persons doing heavy work or exercise). The U.S. EPA develops and is responsible for updating the National Ambient Air Quality Standards, and the CARB is responsible for establishing the California Ambient Air Quality Standards.

Table IV.C-2
Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	California Standard[a]	Federal Standard[b]
Ozone (O_3)	1-hour 8-hour	0.09 ppm —	0.12 ppm 0.08 ppm
Carbon Monoxide (CO)	1-hour 8-hour	20.00 ppm 9.00 ppm	35.00 ppm 9.00 ppm
Nitrogen Dioxide (NO_2)	1-hour Annual Average	0.25 ppm —	— 0.053 ppm
Sulfur Dioxide (SO_2)	1-hour 3-hour 24-hour Annual Average	0.25 ppm — 0.04 ppm —	— 0.5 ppm 0.14 ppm 0.03 ppm
Particulate Matter (PM_{10})	24-hour Annual Geometric Mean	50 $\mu g/m^3$ 20 $\mu g/m^3$	150 $\mu g/m^3$ —

Table IV.C-2
Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	California Standard[a]	Federal Standard[b]
	Annual Arithmetic Mean	—	50 µg/m³
Fine Particulate Matter ($PM_{2.5}$)	24-hour Annual Arithmetic Mean	— 12µg/m³	65 µg/m³ 15 µg/m³
Lead (Pb)	30-day Average Calendar Quarter	1.5 µg/m³ —	— 1.5 µg/m³

Source: Summarized by CAJA from *BAAQMD CEQA Guidelines*, 1996, revised 1999.
Notes:
ppm = parts per million by volume
µg/m³ = micrograms per cubic meter
— = no standard exists for this category
a. California standards for ozone, CO, NO_2, SO_2, and PM_{10} are values that are not to be exceeded.
b. Federal 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 three-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 three-year average of the fourth highest daily concentrations is 0.08 ppm or less. The 24-hour PM_{10} standard is attained when the three-year average of the 99th percentile of the monitored concentrations is less than 150 µg/m³. The 24-hour $PM_{2.5}$ standard is attained when the three-year average of 98th percentile is less than 65 µg/m³.

ENVIRONMENTAL SETTING

Climate

The Project is located in Mono County. The climate of Mono County is dry with clear skies, excellent visibility, hot summers, and wide fluctuations in daily temperatures. The average minimum temperature is in the upper 20s (degrees Fahrenheit), while the average maximum temperature is in the mid- to high 50s. Most of the precipitation in this area, approximately 70 percent, occurs between November and February. Spring is the windiest season, with fast-moving northerly weather fronts. During the day, southerly winds result from the strong solar heating of the mountain slopes, causing upslope circulation. Summer winds are northerly at night as a result of cool air draining off the mountainsides. The mean annual wind speed in Mammoth Lakes is less than 11 miles per hour (mph). Mean annual wind speeds just outside of Mammoth Lakes at elevations of 8,900 ft. and 7,800 ft. above sea level are 21.7 and 11.5 mph, respectively.

Air Quality Monitoring Data

Air quality in Mammoth Lakes is monitored by the GBUAPCD located in Bishop, California. This Basin consists of Inyo, Mono, and Alpine Counties. Spot monitoring conducted by CARB for this area in 1972 identified particulates as the most probable air quality problem for the Basin. As a result, particulate monitoring stations were set up to monitor PM_{10} in the Basin. Currently, there are 12 monitoring sites in the GBVAB. Data reported for the years 2003 to 2005 are summarized in Table IV.C-3.

Table IV.C-3
PM_{10} and $PM_{2.5}$ Concentrations in the Mammoth Lakes Region

	24-Hour Maximum Concentration		Annual Average Concentration		Days Above National/State Standard	
	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}	$PM_{2.5}$	PM_{10}
Regulatory Standards						
California Standard	N/A	50	12	20		
National Standard	65	150	15	50		
Monitoring Data						
2003: Gateway Home Center	34	74	N/A	N/A	0	0/1
2004: Gateway Home Center	27	86	N/A	24.1	0	0/3
2005: Gateway Home Center	27	85	N/A	N/A	0	0/5

Source: CARB, 2006.
All concentrations in $\mu g/m^3$ = micrograms per cubic meter
N/A = there was insufficient (or no) data available to determine the value

Table IV.C-4 presents CO and ozone monitoring data from the Mammoth Lakes Gateway Home Center monitoring station. Table IV.C-4 indicates that from 2000 to 2004, the Gateway Home (Rite Aid) Center monitoring station did not report any violations of the California or National Ambient Air Quality Standards for CO.

The maximum one hour concentration recorded at the Mammoth Lakes – Gateway Home Center station for O_3 was reported as 0.1 ppm. The Gateway Home (Rite Aid) Center monitoring station did report four days in exceedance of the California standard for ozone in 2001. The maximum eight-hour CO concentration measured at the Mammoth Lakes monitoring station was 0.083 ppm in 2003 and 2004. Exceedances of the ozone standard have occurred predominantly at night. In addition, the 2001 CARB transport review found that the San Joaquin Valley was the major contributor to the Mammoth Lakes ozone standard exceedances.[32]

[32] *Town of Mammoth Lakes, General Plan Update EIR, October 2005, p. 4-23.*

Table IV.C-4
Ambient Air Quality Ozone Standards and Monitoring Data Near the Project Area

	Ozone		CO	
	1-hour (ppm)	**8-hour (ppm)**	**1-hour (ppm)**	**8-hour (ppm)**
Regulatory Standards				
California Ambient Air Quality Standard	0.09	N/A	20.0	9.0
National Ambient Air Quality Standard	0.12	0.08	35.0	9.0
Monitoring Data				
2000: Gateway Home Center	-	-	4.2	2.5
2001: Gateway Home Center	0.100	-	15.4	2.5
2002: Gateway Home Center	0.071	-	3.8	1.8
2003: Gateway Home Center	0.088	0.083	-	-
2004: Gateway Home Center	0.093	0.083	-	-

Source: CARB (http://www.arb.ca.gov/adam/welcome/html)
CARB Almanac 2005 – Appendix B
Notes: ppm = parts per million
- = not available or not applicable

Attainment Status

Effective January 23, 2005, the Mono County portion of the Great Basin Valley Air Basin (GBVAB or Basin) has a nonattainment designation for O_3 (State standard only). All of the GBVAB is designated in nonattainment of the federal PM_{10} standard. The Mammoth Lakes area and Mono County are considered in attainment of all other Federal and State standards. Therefore, discussion of impacts for this Project will focus on those pollutants which are designated as non-attainment (O_3 and PM_{10}). Although Mono County is categorized as nonattainment of the State O_3 standard, there is no ozone implementation plan for attaining the ozone standard in Mono County, nor is one required as outlined in the 2001 CARB Ozone transport review. Instead, the document states "Transport from the central portion of the (San Joaquin) Valley is responsible for ozone violations in Mammoth Lakes."[33]

A Draft Air Quality Management Plan (AQMP) for the Town was released on January 19, 1990. The Plan identified PM_{10} sources and mitigation that could be instituted to attain the National Ambient Air Quality Standards. The Plan, prepared by GBAPCD, is required under the CAA and will become part of the State Implementation Plan to attain Federal standards. The Plan identifies exceedances of the PM_{10} standard that occur predominantly in the winter due to increased emissions from wood stoves, fire places, and traffic related road dust and cinders. This change is also fueled largely by the influx of visitors to the Mammoth Lakes area during ski season. The combination of periods of meteorological stagnation and peak periods at the ski resorts result in violations of PM_{10} standards. The Plan includes a control strategy to satisfy the Federal CAA requirement by demonstrating how the Mammoth Lakes area will meet and maintain the National Ambient Air Quality standards for PM_{10}.

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33 *Town of Mammoth Lakes, General Plan Update EIR, October 2005, p. 4-23.*

Sensitive Receptors

Land uses such as primary and secondary schools, hospitals, and convalescent homes are considered to be sensitive receptors to poor air quality because the very young, the old, and the infirm are more susceptible to respiratory infections and other air quality-related health problems than the general public. Residential uses are considered sensitive because people in residential areas are often at home for extended periods of time, so they could be exposed to pollutants for extended periods. Recreational areas are considered moderately sensitive to poor air quality because vigorous exercise associated with recreation places a high demand on the human respiratory function. The nearest sensitive receptors to the Project are residential uses located adjacent to the Project site. In the future, there will also be sensitive residential uses located on adjacent portions of the Project site, since portions of the site are already built and may be occupied while adjacent portions of the site are undergoing construction**.**

ENVIRONMENTAL IMPACTS

Thresholds of Significance

In accordance with Appendix G to the *CEQA Guidelines*, the proposed project would have a significant environmental impact on air quality if it would:

(a) Conflict with or obstruct implementation of the applicable air quality plan;

(b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation;

(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.

Global Climate Change

There are currently no adopted thresholds or guidance to assess the significance of this impact. Global climate change is an international phenomenon; the regulatory background and scientific data are changing rapidly.

Nonetheless, the Californian Environmental Protection Agency Climate Action Team developed a report that "proposes a path to achieve the Governor's targets that will build on voluntary actions of California business, local government and community actions, and State incentive and regulatory programs" (CAT 2006). The report indicates that the strategies will reduce California's emissions to the levels proposed in

Executive Order S-3-05. If the project is not consistent with those strategies that the lead agency deems are feasible, then a project could potentially be deemed to have a significant impact with regards to global climate change.

Project Impacts and Mitigation Measures

Impact AQ-1 Construction Impacts

Foreseeable construction activities for the Project would include site preparation, grading, placement of utilities and other infrastructure, placement of foundations for structures, removal of existing structures, and fabrication of structures across the entire approximately 237-acre Project area. Construction activities typically require the use of heavy trucks, excavating and grading equipment, concrete breakers, concrete mixers, and other mobile and stationary construction equipment. Emissions during grading and construction would be caused by material handling, traffic on unpaved or unimproved surfaces, use of paving materials and architectural coatings, exhaust from construction worker vehicle trips, and exhaust from diesel-powered construction equipment.

Heavy construction activity on dry soil exposed during construction phases through 2017 could cause emissions of dust (usually monitored as PM_{10}). Reactive Organic Gases (ROGs,) nitrogen oxides (NO_x), carbon monoxide (CO), and additional particulate matter emissions also would be created from the combustion of diesel fuel by heavy equipment and construction worker vehicles. Throughout the construction phases, construction-related emissions would vary day-to-day depending on the specific construction phase. Construction-related activities associated with the Project would result in dust and equipment exhaust emissions that could, at times, contribute to nuisances to adjacent residential uses. In addition, the Project would be developed in separate phases, so there may be portions of the site that are built and occupied by residents while adjacent portions of the site are undergoing construction.

Construction projects using typical grading and construction equipment, such as dump trucks, scrapers, bulldozers, compactors, front-end loaders, fork lifts, and cranes which temporarily emit precursors of ozone (e.g., ROGs or NO_x), are already included in the emission inventories of State- and Federally-required air plans and would not have a significant impact on the attainment and maintenance of ozone ambient air quality standards**.** Mono County is classified as attainment for all California Ambient Air Quality Standards (CAAQS), except ozone (O_3) and respirable particulate matter (PM_{10}), and all National Ambient Air Quality Standards (NAAQS) except PM_{10}. However, there is no O_3 implementation plan for attainment in Mono County, nor is one required as outlined in the 2001 CARB Ozone Transport Review.[34] The primary source of O_3 in the Town is from precursor pollutants -- NO_x and Volatile Organic Compounds (VOCs) originating from the San Joaquin Valley. Weather conditions in the San Joaquin Valley are ideal for the production of O_3. As stated earlier, air movements and prevailing winds

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[34] *California Air Resources Board, 2001, page 45.*

carry the O_3 into Mono County and subsequently, Mammoth Lakes. Under California State law, the CARB determines the contribution of transported pollution as overwhelming, significant, inconsequential, or some combination of the three. The CARB Ozone Transport Review states that; "Transport from the central portion of the (San Joaquin) Valley is responsible for ozone violations in Mammoth Lakes . . ." and that the resulting impacts on the Town's air quality were classified as "overwhelming."

The maximum 1-hour O_3 concentration recorded at the Mammoth Lakes Station during the 2000 to 2005 period was 0.1 ppm, which was recorded in 2001. During the reported period, the California standard of 0.09 ppm was exceeded 4 times in 2001; the Federal standard of 0.12 ppm was not exceeded during this time. The maximum 8-hour O_3 concentration was 0.09 ppm, which was recorded in 2001. During the same period, the Federal standard of 0.08 ppm was exceeded two times in 2001. Prior to the above exceedances, the Mammoth Lakes Gateway monitoring station had not recorded an exceedance since 1995.

All of California is in non-attainment for PM_{10} under both state and federal standards. The maximum reported PM_{10} concentration at the Mammoth Lakes – Gateway Home Center monitoring station was 134 micrograms per cubic meter (ug/m^3) recorded in 2001. Between 2000 and 2005 the CAAQS for PM_{10} was exceeded two to five times per year. Therefore, this analysis is primarily focused on the two common pollutants of O_3 and PM_{10}.

The Project has been organized so that it could be developed in several phases, with the golf course expansion and Hotel construction occurring in the first phases and various residential components being progressively constructed at a pace dictated by market conditions. Each phase would operate successfully as a complete entity throughout the entire development. All staging would occur within the Project boundaries. Most construction phases would last approximately 18 to 24 months but some may be as long as 24 to 30 months. Some phases may be under construction simultaneously. Construction activities are proposed to be complete in 2017.

The analysis of daily construction emissions has been prepared utilizing the URBEMIS 2002 computer model. Data sheets for the URBEMIS modeling are provided in Appendix C of this Draft EIR. Due to the construction time frame and the normal day-to-day variability in construction activities, it is difficult to precisely quantify the daily emissions associated with each phase of the proposed construction activities. Nonetheless, Table IV.C-5 identifies daily emissions that are estimated to occur on peak construction days.

Table IV.C-5
Estimated Daily Construction Emissions

Emissions Source	Emissions in Pounds per Day				
	ROC	NO_x	CO	SO_x	PM_{10}
Phase I - Site Grading and Excavation					
Fugitive Dust	-	-	-	-	53.0
Off-Road Diesel Equipment	69.90	438.94	586.99	-	17.02
On-Road Diesel Equipment	1.09	18.89	4.03	0.04	0.55
Worker Trips	0.29	0.40	6.05	0.00	0.03
Total Emissions	***71.28***	***458.23***	***597.07***	***0.04***	***70.60***
Phase I - Building Construction Phase					
Building Construction Off-Road Diesel Equipment	25.34	161.74	209.62	-	6.13
Building Construction Worker Trips	0.64	0.31	7.34	0.00	0.16
Architectural Coatings Off-Gas	288.15	-	-	-	-
Architectural Coatings Worker Trips	0.64	0.31	7.34	0.00	0.16
Asphalt Off-Gas	0.49	-	-	-	-
Asphalt Off-Road Diesel Equipment	4.00	23.19	33.99	-	0.64
Asphalt On-Road Diesel Equipment	0.07	1.20	0.27	0.00	0.03
Asphalt Worker Trips	0.02	0.01	0.20	0.00	0.00
Total Emissions	***319.34***	***186.75***	***258.76***	***0.00***	***7.13***
Phase II - Site Grading and Excavation					
Fugitive Dust	-	-	-	-	39.00
Off-Road Diesel Equipment	69.71	419.86	590.14	-	14.11
On-Road Diesel Equipment	1.48	24.30	5.47	0.07	0.76
Worker Trips	0.24	0.32	5.06	0.00	0.03
Total Emissions	***71.43***	***444.48***	***600.67***	***0.07***	***53.90***
Phase II - Building Construction Phase					
Building Construction Off-Road Diesel Equipment	25.34	161..74	209.62	-	6.13
Building Construction Worker Trips	0.38	0.19	4.45	0.00	0.10
Architectural Coatings Off-Gas	65.37	-	-	-	-
Architectural Coatings Worker Trips	0.38	0.19	4.45	0.00	0.10
Asphalt Off-Gas	0.35	-	-	-	-
Asphalt Off-Road Diesel Equipment	4.00	23.19	33.99	-	0.64
Asphalt On-Road Diesel Equipment	0.05	0.85	0.19	0.00	0.02
Asphalt Worker Trips	0.02	0.01	0.20	0.00	0.00
Total Emissions	***95.89***	***186.17***	***252.89***	***0.00***	***7.00***

Table IV.C-5
Estimated Daily Construction Emissions

Emissions Source	Emissions in Pounds per Day				
	ROC	NO_x	CO	SO_x	PM_{10}
Phase III - Site Grading and Excavation					
Fugitive Dust	-	-	-	-	56.00
Off-Road Diesel Equipment	69.71	419.86	590.14	-	14.11
On-Road Diesel Equipment	1.63	26.80	6.04	0.07	0.84
Worker Trips	0.24	0.32	5.06	0.00	0.03
Total Emissions	***71.58***	***446.98***	***601.24***	***0.07***	***70.98***
Phase III - Building Construction Phase					
Building Construction Off-Road Diesel Equipment	25.34	161.74	209.62	-	6.13
Building Construction Worker Trips	0.55	0.26	6.33	0.00	0.14
Architectural Coatings Off-Gas	255.71	-	-	-	-
Architectural Coatings Worker Trips	0.55	0.26	6.33	0.00	0.14
Asphalt Off-Gas	0.41	-	-	-	-
Asphalt Off-Road Diesel Equipment	4.00	23.19	33.99	-	0.64
Asphalt On-Road Diesel Equipment	0.06	1.02	0.23	0.00	0.03
Asphalt Worker Trips	0.02	0.01	0.20	0.00	0.00
Total Emissions	***286.64***	***186.48***	***256.70***	***0.00***	***7.09***
Phase IV - Site Grading and Excavation					
Fugitive Dust	-	-	-	-	39.00
Off-Road Diesel Equipment	69.71	419.86	590.14	-	14.11
On-Road Diesel Equipment	0.96	12.53	3.83	0.07	0.53
Worker Trips	0.15	0.20	3.30	0.00	0.03
Total Emissions	***70.82***	***432.59***	***597.27***	***0.07***	***0.03***
Phase IV - Building Construction Phase					
Building Construction Off-Road Diesel Equipment	25.34	161.74	209.62	-	6.13
Building Construction Worker Trips	0.23	0.11	2.89	0.00	0.10
Architectural Coatings Off-Gas	64.59	-	-	-	-
Architectural Coatings Worker Trips	0.23	0.11	2.89	0.00	0.10
Asphalt Off-Gas	0.34	-	-	-	-
Asphalt Off-Road Diesel Equipment	4.00	23.19	33.99	-	0.64
Asphalt On-Road Diesel Equipment	0.03	0.43	0.13	0.00	0.01
Asphalt Worker Trips	0.01	0.01	0.13	0.00	0.00
Total Emissions	***94.77***	***185.59***	***249.64***	***0.00***	***6.99***

Note: Subtotals may not appear to add correctly due to rounding in the URBEMIS 2002 model.
Source: Christopher A. Joseph & Associates, 2007. Calculation sheets are provided in Appendix C of this Draft EIR.

As shown, development of the Project would result in the generation of pollutant emissions. However, the GUAPCD does not currently have thresholds for determining the level of significance for air emissions. In the absence of such thresholds, any emissions that may result in a violation of an air quality standard or contribute substantially to an existing air quality violation will be considered significant. Since PM_{10} is classified as non-attainment, any PM_{10} emissions will contribute substantially to an existing air quality violation. Therefore, unless PM_{10} emissions are reduced by implementation of feasible control measures, impacts caused by these emissions would be considered significant. As a result, in the absence of mitigation measures, construction activities at the Project site would result in ***potentially significant*** air quality impacts.

Mitigation Measure AQ-1 Construction

The Project applicant shall require that the following practices be implemented by including them in the contractor construction documents to reduce the emissions of pollutants generated by heavy-duty diesel-powered equipment operating at the Project site throughout the Project construction phases:

a. Water all construction areas at least twice daily; water trucks will be filled locally after the contractor makes water acquisition agreements and obtains any required permits.

b. Cover all trucks hauling soil, sand, and other loose materials;

c. Apply clean gravel, water, or non-toxic soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites;

d. Remove excess soils from paved access roads, parking areas and staging areas at construction sites;

e. Sweep streets daily (with mechanical sweepers) if visible soil material is carried onto adjacent public streets;

f. Hydroseed or apply non-toxic soil stabilizers to inactive construction areas (previously graded areas inactive for ten days or more);

g. Enclose, cover, water twice daily, or apply non-toxic soil binders to exposed stockpiles (dirt, sand, etc.);

h. Limit traffic speeds on unpaved roads to 15 miles per hour;

i. Install gravel-bags, cobble entries, or other Best Management Practices (BMPs) and erosion control measures to prevent silt runoff to public roadways;

j. Replant vegetation in disturbed areas as soon as possible;

k. Install wheel washers for all exiting trucks or wash off the tires or tracks of all trucks and equipment leaving the construction site;

l. Suspend excavation and grading activities when wind (as instantaneous gusts) exceeds 50 miles per hour (mph) and when sustained winds exceed 25 mph increase the frequency of watering from twice daily, as described in Mitigation Measure AQ-1a above, to three to four times a day;

m. The construction fleet will meet the terms set forth in the CARB Proposed Regulation for in-use Off Road Diesel Vehicles, paragraph (d)(3) Idling. The proposed regulation implementation date is May 1, 2008.

n. Limit the hours of operation of heavy duty equipment and/or the amount of equipment in use;

o. All equipment shall be properly tuned and maintained in accordance with the manufacturer's specifications;

p. When feasible, alternative fueled or electrical construction equipment shall be used for the Project site;

q. Use the minimum practical engine size for construction equipment;

r. Gasoline-powered equipment shall be equipped with catalytic converters, where feasible; and

As shown below in Table IV.C-6, even with implementation of the recommended mitigation measures outlined above, development of the Project would continue to result in the generation of pollutant emissions. In addition, PM_{10} emissions cannot be reduced to zero with the implementation of the recommended mitigation measures. Therefore, the Project would continue to result in a ***significant and unavoidable*** impact with regard to PM_{10} emissions.

Table IV.C-6
Estimated Mitigated Daily Construction Emissions

Emissions Source	Emissions in Pounds per Day				
	ROC	NOx	CO	SO_x	PM_{10}
Phase I - Site Grading and Excavation					
Fugitive Dust	-	-	-	-	31.66
Off-Road Diesel Equipment	69.90	438.94	586.99	-	17.02
On-Road Diesel Equipment	1.09	18.89	4.03	0.04	0.546
Worker Trips	0.29	0.40	6.05	0.00	0.01
Total Emissions	***71.28***	***458.23***	***597.07***	***0.04***	***17.49***
Phase I - Building Construction Phase					
Building Construction Off-Road Diesel Equipment	2.53	97.04	20.96	-	0.92
Building Construction Worker Trips	0.64	0.31	7.34	0.00	0.16
Architectural Coatings Off-Gas	288.15	-	-	-	-
Architectural Coatings Worker Trips	0.64	0.31	7.34	0.00	0.16
Asphalt Off-Gas	0.49	-	-	-	-
Asphalt Off-Road Diesel Equipment	4.00	13.91	3.40	-	0.10
Asphalt On-Road Diesel Equipment	0.07	1.20	0.27	0.00	0.03
Asphalt Worker Trips	0.02	0.01	0.20	0.00	0.00
Total Emissions	***296.54***	***122.78***	***39.51***	***0.00***	***1.38***
Phase II - Site Grading and Excavation					
Fugitive Dust	-	-	-	-	23.29

Table IV.C-6
Estimated Mitigated Daily Construction Emissions

Emissions Source	Emissions in Pounds per Day				
	ROC	**NOx**	**CO**	**SO_x**	**PM_{10}**
Off-Road Diesel Equipment	69.71	419.86	590.14	-	14.11
On-Road Diesel Equipment	1.48	24.30	5.47	0.07	0.76
Worker Trips	0.24	0.32	5.06	0.00	0.03
Total Emissions	***71.43***	***444.48***	***600.67***	***0.07***	***38.19***
Phase II - Building Construction Phase					
Building Construction Off-Road Diesel Equipment	2.53	97.04	20.96	-	0.92
Building Construction Worker Trips	0.38	0.19	4.45	0.00	0.10
Architectural Coatings Off-Gas	65.37	-	-	-	-
Architectural Coatings Worker Trips	0.38	0.19	4.45	0.00	0.10
Asphalt Off-Gas	0.35	-	-	-	-
Asphalt Off-Road Diesel Equipment	0.40	13.91	3.40	-	0.10
Asphalt On-Road Diesel Equipment	0.05	0.85	0.19	0.00	0.02
Asphalt Worker Trips	0.02	0.01	0.20	0.00	0.00
Total Emissions	**69.48**	**112.20**	**33.65**	**0.00**	**1.25**
Phase III - Site Grading and Excavation					
Fugitive Dust	-	-	-	-	33.45
Off-Road Diesel Equipment	69.71	419.86	590.14	-	14.11
On-Road Diesel Equipment	1.63	26.80	6.04	0.07	0.84
Worker Trips	0.24	0.32	5.06	0.00	0.03
Total Emissions	***71.58***	***446.98***	***601.24***	***0.07***	***48.43***
Phase III - Building Construction Phase					
Building Construction Off-Road Diesel Equipment	2.53	97.04	20.96	-	0.92
Building Construction Worker Trips	0.55	0.26	6.33	0.00	0.14
Architectural Coatings Off-Gas	255.71	-	-	-	-
Architectural Coatings Worker Trips	0.55	0.26	6.33	0.00	0.14
Asphalt Off-Gas	0.41	-	-	-	-
Asphalt Off-Road Diesel Equipment	0.40	13.91	3.40	-	0.10
Asphalt On-Road Diesel Equipment	0.06	1.02	0.23	0.00	0.03
Asphalt Worker Trips	0.02	0.01	0.20	0.00	0.00
Total Emissions	***260.23***	***112.51***	***37.44***	***0.00***	***1.33***
Phase IV - Site Grading and Excavation					
Fugitive Dust	-	-	-	-	23.29
Off-Road Diesel Equipment	69.71	419.86	590.14	-	14.11
On-Road Diesel Equipment	0.96	12.53	3.83	0.07	0.53
Worker Trips	0.15	0.20	3.30	0.00	0.03
Total Emissions	***70.82***	***432.59***	***597.27***	***0.07***	***0.03***
Phase IV - Building Construction Phase					
Building Construction Off-Road Diesel Equipment	2.53	97.04	20.96	-	0.92
Building Construction Worker Trips	0.23	0.11	2.89	0.00	0.10
Architectural Coatings Off-Gas	64.59	-	-	-	-
Architectural Coatings Worker Trips	0.23	0.11	2.89	0.00	0.10
Asphalt Off-Gas	0.34	-	-	-	-
Asphalt Off-Road Diesel Equipment	0.40	13.91	3.40	-	0.10

Table IV.C-6
Estimated Mitigated Daily Construction Emissions

Emissions Source	Emissions in Pounds per Day				
	ROC	NOx	CO	SO_x	PM_{10}
Asphalt On-Road Diesel Equipment	0.03	0.43	0.13	0.00	0.01
Asphalt Worker Trips	0.01	0.01	0.13	0.00	0.00
Total Emissions	***68.36***	***111.62***	***30.40***	***0.00***	***1.24***

Note: Subtotals may not appear to add correctly due to rounding in the URBEMIS 2002 model.
Source: Christopher A. Joseph & Associates, 2007. Calculation sheets are provided in Appendix C of this Draft EIR.

Impact AQ-2 Operational Emissions

Operational emissions generated by both stationary and mobile sources would result from normal day-to-day activities on the Project site after occupation. Stationary area source emissions would be generated by the consumption of natural gas for space and water heating devices, cooking appliances, and fireplaces, the operation of landscape maintenance equipment, the use of consumer products, and the application of architectural coatings (paints). Mobile emissions would be generated by the motor vehicles traveling to and from the Project site. In accordance with the 2007 General Plan Policy R.10.H, no solid fuel burning appliances (fireplaces) shall be permitted to be installed within any residential units within multi-unit developments within the Town of Mammoth Lakes. According to the Traffic Impact Analysis, the portion of vehicle trips that would be diverted to transit is 15 percent (see Appendix J of this Draft EIR).

The Mammoth Lakes portion of the GBVAB is designated as nonattainment for O_3 (State standard only) and as a nonattainment area for PM_{10} (State and Federal standards). As discussed previously, however, the O_3 impact in Mammoth Lakes is primarily the result of pollution generated in the San Joaquin Valley, transported by air currents and winds over the Sierra Nevada and is not a condition substantially generated by activities and sources in the Town. In fact, exceedances of the O_3 standard would likely occur without any contribution of emissions of O_3 precursors (nitrogen oxides and hydrocarbons) from Town activity. In the absence of any quantifiable thresholds of significance from the GBUAPCD, as well as the demonstrated condition in which local O_3 levels are created by emissions generated outside the Town and reach levels in excess of state standards only in the evening, the increase in O_3 precursor emissions as a result of implementation of the Project would not substantially contribute to the exceedances of the State O_3 standard.

According to the AQMP, particulate matter that causes PM_{10} violations consists primarily of road dust and soot from wood combustion. In other words, tailpipe emissions from heavy-duty diesel engines constitute a minor or negligible component of PM_{10} impacts in the Mammoth Lakes area. In addition, motor vehicle emissions such as those used in snow-removal equipment have been greatly reduced since the AQMP analysis was completed because State and Federal programs now require the use of low-sulfur diesel fuel as of 2006. When fully implemented in 2010, heavy duty on road diesel engines will be up to 95 percent cleaner than today's models. As a result, CARB estimates a 90 percent reduction in particulate emissions for new on- and off-road engines.

Nonetheless, an analysis of daily operational emissions has been prepared utilizing the URBEMIS 2002 computer model. As discussed previously, the Project would be divided into four phases. Each phase would operate successfully as a complete entity throughout the entire development. Some phases may be under construction simultaneously. Therefore, in order to accurately predict the emissions generated by activities at the Project site, the operational emissions from Phase I and the construction emissions from Phase II have been combined. This is then repeated for Phase III and Phase IV until all Phases of the Project have been completed and the entire Project is at build-out. The results of these calculations are presented in Table IV.C-7.

Table IV.C-7
Estimated Daily Operational Emissions

Emissions Source	**Emissions in Pounds per Day**			
	ROC	**NOx**	**CO**	**SOx**
Proposed Phase I Operational Emissions				
Water and Space Heating	0.78	10.80	9.07	0
Landscape Maintenance Equipment	0.75	0.03	4.68	0.00
Consumer Products	0.00	-	-	-
Architectural Coatings	1.82	-	-	-
Motor Vehicles	68.86	83.14	820.59	0.54
Phase I Total Operational Emissions	**72.21**	**93.97**	**834.34**	**0.54**
Peak Phase II Construction Emissions (Mitigated)	*71.43*	*444.48*	*600.67*	*0.07*
Total Emissions	***143.64***	***538.45***	***1435.01***	***0.61***
Proposed Phase I & II Operational Emissions				
Water and Space Heating	0.15	1.92	0.83	0
Landscape Maintenance Equipment	0.25	0.01	1.56	0.00
Consumer Products	12.23	-	-	-
Architectural Coatings	4.07	-	-	-
Motor Vehicles	13.97	15.43	166.16	0.12
Phase II Total Operational Emissions	**30.67**	**17.36**	**168.55**	**0.12**
Peak Phase III Construction Emissions (Mitigated)	*71.58*	*446.98*	*601.24*	*0.07*
Phase I Operational Emissions	*72.21*	*93.97*	*834.34*	*0.54*
Total Emissions	***174.46***	***558.31***	***1,604.13***	***0.73***
Proposed Phase I, II & III Operational Emissions				
Water and Space Heating	0.21	2.70	1.17	0
Landscape Maintenance Equipment	0.37	0.01	2.34	0.00
Consumer Products	17.12	-	-	-
Architectural Coatings	5.75	-	-	-
Motor Vehicles	18.72	20.58	221.03	0.17
Phase III Total Operational Emissions	**42.17**	**23.29**	**224.54**	**0.17**
Peak Phase IV Construction Emissions	*70.82*	*432.59*	*597.27*	*0.07*
Phase I Operational Emissions	*72.21*	*93.97*	*834.34*	*0.54*
Phase II Operational Emissions	*30.67*	*17.36*	*168.55*	*0.12*
Total Emissions	***215.87***	***567.21***	***1,824.7***	***0.90***
Proposed Phase I, II,III and IV Operational Emissions				
Water and Space Heating	0.15	1.89	0.80	0
Landscape Maintenance Equipment	0.12	0.00	0.78	0.00
Consumer Products	12.23	-	-	-
Architectural Coatings	4.02	-	-	-

Table IV.C-7
Estimated Daily Operational Emissions

Emissions Source	Emissions in Pounds per Day			
	ROC	NOx	CO	SOx
Motor Vehicles	8.53	9.04	97.36	0.12
Phase IV Total Operational Emissions	***25.05***	***10.93***	***98.94***	***0.12***
Phase I Operational Emissions	*72.21*	*93.97*	*834.34*	*0.54*
Phase II Operational Emissions	*30.67*	*17.36*	*168.55*	*0.12*
Phase III Operational Emissions	*42.17*	*23.29*	*224.54*	*0.17*
Total Emissions	***170.10***	***145.55***	***1,326.37***	***0.95***
Total (Site-Wide) Operational Emissions at Build-Out	***170.10***	***145.55***	***1,326.47***	***0.95***
Note: Subtotals may not appear to add correctly due to rounding in the URBEMIS 2002 model.				
Source: Christopher A. Joseph & Associates, 2007. Calculation sheets are provided in Appendix C of this DEIR..				

As CO, NO_x, ROC, and SO_x are classified as in attainment, the emissions of these pollutants would constitute ***less-than-significant*** impacts.

The impacts of PM_{10} emissions as a result of Project operations were evaluated based on the Project's compliance with the Town of Mammoth Lakes' AQMP. This plan requires that vehicle miles traveled (VMT) per day in the Town of Mammoth Lakes not exceed 106,600 and that all new residential developments be limited to one solid fuel burning appliance per unit. These requirements are based on the assumption that 23.8 grams of PM_{10} are emitted per VMT and that each EPA II solid-fuel burning appliance emits an average of 171 grams of PM_{10} per day. Based on Table J of the Traffic Impact Analysis of the is expected to generate 17,732 VMT per day upon build-out (see Appendix J of this Draft EIR). However, due to Policy R.10.H from the 2007 General Plan, no solid fuel burning appliances shall be permitted to be installed within any residential units within multi-unit developments. Therefore only one solid fuel burning appliance would be allowed in the Hotel and the Project's residential units would not contribute to PM_{10} emissions from solid fuel burning appliances. This information was used to calculate total daily PM_{10} emissions for the Project at the time of the Master Plan build-out. As shown in Table IV.C-8, the total PM_{10} emissions anticipated as a result of the Project at its completion is 422,193 grams per day. As a result, particulate emissions generated by wood combustion from the Project would not contribute to Federal and State PM_{10} violations.

Table IV.C-8
PM_{10} Emissions for the Town of Mammoth Lakes as Outlined in the AQMP

Emission Source	Quantity	Emission Rate grams/day	PM_{10} Emissions grams/day
Phase II solid-fuel burning appliances	1	171	171
Vehicle Miles Traveled	17,732	23.8	422,022
		Total PM_{10} Emissions	**422,193**
Source: Christopher A. Joseph and Associates, August 2007.			

Since the AQMP thresholds of 106,600 VMT per day and one EPA II solid-fuel burning appliances per residential unit are only meant to address cumulative impacts, operational impacts from PM_{10} emissions will be addressed in the cumulative impacts section below.

Mitigation Measure AQ-2 Operational Emissions

The Project applicant shall require the following implementation measures to reduce PM_{10} operational emissions resulting from the Project to a ***less than significant*** level:

a. The Project shall include a transportation demand management program to reduce overall vehicle miles traveled (VMTs), in order to demonstrate compliance with the Federal PM_{10} standard of 150 $\mu g/m^3$. The program shall include, but not be limited to, circulation system improvements, shuttles to and from parking areas, and the location of facilities to encourage pedestrian circulation.

b. The Project shall be linked to existing developed areas through existing road networks, public transit systems, open space systems, and bicycle and pedestrian systems.

c. The Project shall implement trip reduction measures particularly during PM peak traffic hours to disperse trips between parking areas and mountain portals to and from the ski area.

d. Residential condominium units shall enter into a transit fee agreement with the Town consistent with the Town's established Transit Fee Agreement Program.

e. No solid fuel burning appliances shall be permitted within residential units within multi-family residential developments.

Impact AQ-3 Local CO Concentrations

Traffic-congested roadways and intersections have the potential to generate localized high levels of carbon monoxide (CO). By generating additional traffic, the Project could potentially cause exceedances of the 1-hour or 8-hour Federal or State CO standards. These conditions would only occur during worst-case atmospheric conditions when temperatures are very low and there is little to no wind speed. Although the Mammoth Lakes Gateway Home Center monitoring station has not recorded any exceedances of the State or Federal CO standards, elevated CO concentrations due to heavy traffic volumes and congestion at specific intersections or roadway segments are generally localized and can lead to high levels of CO, or "hot spots." For this reason, CO modeling was performed in the Project area for intersections or roadway segments currently operating at LOS D, E, or F that would be affected by Project traffic, or for intersections that would decline to LOS D, E, or F as a result of the Project (see Appendix J of this Draft EIR). Therefore, CO modeling was performed for the following roadway intersections based on the Saturday peak traffic hour:

- Minaret Road/Meridian Road (LOS D in 2017 with cumulative development); and

- Minaret Road/Main Street (LOS D in 2017 with cumulative development and Project associated mitigation)

For this analysis, CO concentrations were calculated based on a simplified CALINE4 screening procedure to determine if the Project would cause any exceedances of the State and Federal CO standards. The national 1-hour ambient air quality standard is 35.0 ppm and the State 1-hour ambient air quality standard is 20.0 ppm. The 8-hour national and state ambient air quality standard is 9.0 ppm. This methodology assumes worst-case conditions (i.e., wind direction is parallel to the primary roadway, 90 degrees to the secondary road; wind speed of less than one meter per second; and a high level of atmospheric stability or lack of change) and provides a screening of maximum, worst-case CO concentrations. Maximum CO concentrations were calculated for peak-hour traffic volumes at the intersections noted above under existing conditions, existing plus Project conditions, and cumulative conditions. Results are presented in Table IV.C-9 and Table IV.C-10.

Table IV.C-9
Summary of Localized CO Analysis (1-hour) for the Project

Intersection	**1-Hour CO Concentrations (ppm)**		
	Existing 2004	**Existing plus Approved Projects**	**Cumulative w/Project (2017)**
Minaret Road/Meridian Road	2.3	2.0	2.2
Minaret Road/Main Street	3.2	2.4	2.5
1-Hour Ambient Air Quality Standard	**20.0**	**20.0**	**20.0**

Source: Christopher A Joseph & Associates, 2007.
Notes: Concentrations are based on CALINE4 outputs that are adjusted with anticipated background CO concentrations of 1.4 ppm (1-hr).

The year 2017 was used as the date for CO emission analysis under cumulative conditions, which includes all future growth assumed in Section IV.M (Traffic/Circulation) of this Draft EIR. In some cases, future or cumulative CO emissions are lower than existing CO levels because vehicles are projected to improve in efficiency in the future and reduce CO emissions. Traffic conditions may also improve in the future at some intersections because of traffic improvement measures, thus reducing concentrated CO emissions. Based on the CALINE4 computer-modeling results (Table IV.C-9 and Table IV.C-10.), local CO concentrations would not exceed state or national ambient air quality standards. Therefore, emissions of CO associated with the Project would result in a ***less-than-significant*** CO air quality impact.

Table IV.C-10
Summary of Localized CO Analysis (8-hour) for the Project

Intersection	8-Hour CO Concentrations (ppm)		
	Existing 2004	Existing plus Approved Projects	Cumulative w/Project (2017)
Minaret Road/Meridian Road	1.7	1.4	1.5
Minaret Road/Main Street	2.2	1.7	1.7
8-Hour Ambient Air Quality Standard	**9.0**	**9.0**	**9.0**

Source: Christopher A Joseph & Associates, 2007.
Notes: Concentrations are based on CALINE4 outputs that are adjusted with anticipated background CO concentrations of 1.0 pm (8-hr).

Impact AQ-4 Greenhouse Gas Emissions

Parts of the Earth's atmosphere act as an insulating blanket of just the right thickness, trapping sufficient solar energy to keep the global average temperature in a suitable range. The blanket is a collection of atmospheric gases called greenhouse gases (GHG) based on the idea that the gases also trap heat like the glass walls of a greenhouse. These gases, water vapor, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N2O), ozone (O_3), chlorofluorocarbons (CFCs), hydroflourocarbons (HFCs), perflourocarbons (PFCs), and sulfur hexafluoride, as discussed and defined above, all act as effective global insulators, reflecting visible light and infrared radiation back to Earth. Human activity such as producing electricity and driving motor vehicles has elevated the concentration of these gases in the atmosphere. Many scientists believe that this in turn, is causing the Earth's temperature to rise. A warmer Earth may lead to changes in rainfall patterns, much smaller polar ice caps, a rise in sea level, and a wide range of impacts on plants, wildlife, and humans.

An individual project cannot generate enough greenhouse gas emissions to influence global climate change. However, an individual project may contribute an incremental amount of GHG emissions. For most projects, the main contribution of GHG emissions is from motor vehicles, but how much of those emissions are "new" is uncertain. New projects do not create new drivers, and therefore do not create a new mobile source of emissions. Rather, new projects only redistribute the existing traffic patterns. Larger projects will certainly affect a larger geographic area, but again, would not cause the creation of new drivers. Some mixed-use and transportation-oriented projects can actually reduce the number of vehicle miles traveled that a person drives.

Greenhouse Gas Inventory

The emissions are estimated in tons per year, which are converted to teragrams of carbon dioxide equivalents (Tg CO_2 Eq.) using the formula: Tg CO_2 Eq. = (tons of gas) x (GWP) x (0.902 metric tons of gas) / (1,000,000). One Tg is equal to one million metric tons. The global warming potential (GWP) for the gases assessed are located in Table IV.C-1.

Note that emissions models such as EMFAC and URBEMIS evaluate aggregate emissions and do not demonstrate, with respect to a global impact, how much of these emissions are "new" emissions specifically attributable to the Project in question. For most projects, the main contribution of greenhouse gas emissions is from motor vehicles, but how much of those emissions are "new" is uncertain. New projects do not create new drivers. Some mixed use and transportation-oriented projects can actually reduce the number of vehicle miles traveled that a person drives; this reduction is not typically discussed in CEQA documents. Therefore, it is anticipated that the Project will not substantially add to the global inventory of greenhouse gas emissions. This is especially true considering that the Project is adding retail uses next to residential uses. Nevertheless, greenhouse gas emissions are estimated using procedures similar to those for criteria pollutants.

Carbon Dioxide: The Project will generate emissions of carbon dioxide primarily in the form of vehicle exhaust and in the consumption of natural gas for heating from onsite combustion. Carbon dioxide emissions from vehicles were calculated with EMFAC 2007 emission factors using burden values for the South Coast Air Quality Management District. Carbon dioxide emissions from natural gas combustion were generated from guidance as presented in the Climate Leaders Greenhouse Inventory Protocol.[35] The natural gas usage came from discussions with the California Energy Commission; it is lower than default URBEMIS 2002 natural gas usage because the Project will only use natural gas for heating the buildings and for minimal hot water heating. The carbon dioxide emissions are shown in Table IV.C-11. As shown in Table IV.C-11, at build-out, the Project is estimated to emit 0.0048 Tg CO_2 Eq.

Table IV.C-11
Carbon Dioxide Emissions

Emission Source	2017
Vehicles (tons/year)	4,028.33
Natural Gas Combustion (tons/year)	1,397.37
Total (tons per year)	**5,425.70**
Total (Tg CO_2 Eq.)	***0.0048***

Methane: The Project will generate some methane gas from vehicle emissions and natural gas combustion. Methane emissions from natural gas combustion were generated using guidance as presented in the Climate Leaders Greenhouse Inventory Protocol.[36] Methane emissions from vehicles were estimated using U.S. EPA emission factors for on-highway vehicles and the same assumptions used to estimate criteria pollutants in URBEMIS 2002. The emissions are shown in Table IV.C-12. As shown in Table IV.C-12, in 2017, emissions would be 8.08E-5 Tg CO_2 Eq.

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35 *U.S. Environmental Protection Agency, 2004b.*
36 *Ibid.*

Table IV.C-12
Methane Emissions

Emission Source	2017
Vehicles (tons/year)	0.69
Natural Gas Combustion (tons/year)	3.58
Total (tons/year)	**4.27**
Total (Tg CO_2 Eq.)	***8.08E-5***

Nitrous Oxide: The Project generates small amounts of nitrous oxide from vehicle emissions. Emissions from natural gas combustion were generated using guidance as presented in the Climate Leaders Greenhouse Inventory Protocol.[37] Nitrous oxide from vehicles was estimated using U.S. EPA emission factors for on-highway vehicles and the same assumptions that were used to estimate criteria pollutants. The emissions are presented in Table IV.C-13. As shown in Table IV.C-13, in 2017 emissions would be 3.01E-3 Tg CO2 Eq.

Table IV.C-13
Nitrous Oxide Emissions

Emission Source	2017
Vehicles (tons/year)	10.69
Natural Gas Combustion (tons/year)	0.078
Total (tons/year)	**10.76**
Total (Tg CO_2 Eq.)	***3.01E-3***

Water Vapor: The Project does not contribute to this greenhouse gas because water vapor concentrations in the upper atmosphere are primarily due to climate feedbacks and not emissions from industrial and commercial activities.

Ozone is a greenhouse gas; however, unlike the other greenhouse gases, ozone in the troposphere is relatively short-lived and therefore is not global in nature. According to CARB, it is difficult to make an accurate determination of the contribution of ozone precursors (NO_x and ROGs) to global warming.[38] Therefore, Project emissions of ozone precursors would not significantly contribute to global climate change.

Chlorofluorocarbons: As mentioned previously, there is a ban on chlorofluorocarbons; therefore, the Project will not generate emissions of these greenhouse gases and is not considered any further in this analysis.

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[37] *Ibid.*

[38] *California Air Resources Board, 2004b.*

Hydrofluorocarbons: The Project may emit a small amount of hydroflurocarbon emissions from leakage and service of refrigeration and air conditioning equipment and from disposal at the end of the life of the equipment.[39] However, the details regarding the refrigerant used and the capacity are unknown at this time.

Perfluorocarbons and sulfur hexafluoride are typically used in industrial applications, none of which would be used by the Project. Therefore, it is not anticipated that the Project would emit any of these greenhouse gases.

Inventory Summary: The primary greenhouse gas generated by the Project would be carbon dioxide. At build-out, total unmitigated carbon dioxide equivalents would be 0.0048 Tg CO_2 Eq., which is 0.0009 percent of California's 2004 emissions (0.0048 Tg CO_2 Eq. divided by 492 Tg CO_2 Eq. = 0.0000097 * 100 = 0.0009 percent). The Town and the Great Basin Unified Air Pollution Control District currently do not have greenhouse gas inventories.

Compliance with Strategies

California Governor Arnold Schwarzenegger announced on June 1, 2005 through Executive Order S-3-05 GHG emission reduction targets as follows: by 2010, reduce GHG emissions to 2000 levels; by 2020, reduce GHG emissions to 1990 levels; by 2050, reduce GHG emissions to 80 percent below 1990 levels. AB 32, as discussed above, requires that by January 1, 2008, CARB shall determine what the statewide greenhouse gas emissions level was in 1990, and approve a statewide greenhouse gas emissions limit that is equivalent to that level, to be achieved by 2020. However, it should be noted that at the time of publication of this document, the CARB had not yet published the quantified 1990 GHG emissions inventory.

Therefore, the California Environmental Protection Agency prepared a Climate Action Team Report (CAT Report) that "proposes a path to achieve the Governor's targets that will build on voluntary actions of California business, local government and community actions, and State incentive and regulatory programs."[40] The CAT Report introduces strategies to reduce California's emissions to the levels proposed in Executive Order S-3-05. Under AB 32, CARB has the primary responsibility for reducing GHG emissions. However, the CAT Report contains strategies that many other California agencies can utilize. These strategies are presented in Table IV.C-14, below. As shown, the Project complies with all feasible and applicable measures to bring California to the emission reduction targets. However, as no thresholds of significance pertaining to GHG emissions have been adopted by the Town or established by the State, no determination on the significance of this impact has been made.

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[39] *U.S. Environmental Protection Agency, 2004c.*

[40] *California Environmental Protection Agency, Climate Action Team Report, 2006.*

Table IV.C-14
Project Compliance with 2006 CAT Report Greenhouse Gas Emission Reduction Strategies

STRATEGY	PROJECT COMPLIANCE
California Air Resources Board	
Vehicle Climate Change Standards: AB 1493 (Pavley) required the state to develop and adopt regulations that achieve the maximum feasible and cost-effective reduction of climate change emissions emitted by passenger vehicles and light duty trucks. Regulations were adopted by the CARB I September 2004.	**Consistent.** Following a phase-in period, the majority of the vehicles that access the Project would be expected to be in compliance with any vehicle standards that CARB adopts.
Other Light Duty Vehicle Technology: New standards would be adopted to phase in beginning in the year 2017 model year.	**Consistent.** Following a phase-in period, the majority of the vehicles that access the Project would be expected to be in compliance with any vehicle standards that CARB adopts.
Diesel Anti-Idling: In July 2004, the CARB adopted a measure to limit diesel-fueled commercial motor vehicle idling.	**Consistent.** Mitigation C-1 ensures that diesel trucks accessing the Project site will idle for 5 minutes or less.
Hydrofluorocarbon Reduction: 1) Ban retail sale of HFC in small cans; 2) Require that only low GWP refrigerants be used in new vehicular systems; 3) Adopt specifications for new commercial refrigeration; 4) Add refrigerant leak-tightness to the pass criteria for vehicular inspection and maintenance programs; 5) Enforce federal ban on releasing HFCs.	**Consistent.** This measure applies to consumer products. When CARB adopts regulations for these reduction measures, any products that the regulations cover will comply with the measures.
Alternative Fuels: Biodiesel Blends: CARB would develop regulations to require the use of 1 to 4 percent biodiesel displacement of California diesel fuel.	**Not Applicable.**
Alternative Fuels: Ethanol: Increased use of ethanol fuel.	**Not Applicable.**
Heavy-Duty Vehicle Emission Reduction Measures: Increased efficiency in the design of heavy duty vehicles and an education program for the heavy duty vehicle sector.	**Consistent.** These are CARB enforced standards; vehicles that access the Project that are required to comply with the standards will comply with the strategy.
Reduced Venting and Leaks on Oil and Gas Systems: Rule considered for adoption by the Air Pollution Control Districts for improved management practices.	**Not Applicable.**
Hydrogen Highway: The California Hydrogen Highway Network (CA H2 Net) is a State initiative to promote the use of hydrogen as a means of diversifying the sources of transportation energy.	**Not Applicable.**
Achieve 50% Statewide Recycling Goal: Achieving the State's 50 percent waste diversion mandate as established by the Integrated Waste Management Act of 1989, (AB 939, Sher, Chapter 1095, Statutes of 1989), will reduce climate change emissions associated with energy intensive material extraction and production as well as methane emission from landfills. A diversion rate of 48% has been achieved on a statewide basis. Therefore, a 2% additional reduction is needed.	**Consistent.** During operation, the on-site facilities will recycle items such as cardboard boxes and paper.

Table IV.C-14
Project Compliance with 2006 CAT Report Greenhouse Gas Emission Reduction Strategies

STRATEGY	PROJECT COMPLIANCE
Zero Waste – High Recycling: Additional recycling beyond the State's 50% recycling goal.	**Not Applicable.**
Landfill Methane Capture: Install direct gas use or electricity projects at landfills to capture and use emitted methane.	**Not Applicable.**
Department of Forestry	
Urban Forestry: A new statewide goal of planting 5 million trees in urban areas by 2020 would be achieved through the expansion of local urban forestry programs.	**Not Applicable.**
Afforestation/Reforestation Projects: Reforestation projects focus on restoring native tree cover on lands that were previously forested and are now covered with other vegetative types.	**Not Applicable.**
Department of Water Resources	
Water Use Efficiency. Approximately 19 percent of all electricity, 30 percent of all natural gas, and 88 million gallons of diesel are used to convey, treat, distribute and use water and wastewater. Increasing the efficiency of water transport and reducing water use would reduce greenhouse gas emissions.	**Consistent.** The Project does not include any major source of water consumption. However, the Project would be required to adhere to the Uniform Building Code (UBC) which requires the installation of low flow water devices in new commercial development.
California Energy Commission (CEC)	
Building Energy Efficiency Standards in Place and in Progress: Public Resources Code 25402 authorizes the CEC to adopt and periodically update its building energy efficiency standards (that apply to newly constructed buildings and additions to and alterations to existing buildings).	**Consistent.** The Project will be required to comply with the updated Title 24 standards for building construction including exterior lighting requirements, as applicable. Some of the changes required in the new standard include requirements for indoor lighting efficiency, skylights in 'Big Box' stores with controls to shut off lights when daylight is available, cool roof coating requirements, duct insulation, and efficient space conditioning.
Appliance Energy Efficiency Standards in Place and in Progress: Public Resources Code 25402 authorizes the Energy Commission to adopt and periodically update its appliance energy efficiency standards (that apply to devices and equipment using energy that are sold or offered for sale in California).	**Consistent.** Appliances that are purchased for the Project will be consistent with existing energy efficiency standards.
Cement Manufacturing: Cost-effective reductions to reduce energy consumption and to lower carbon dioxide emissions in the cement industry.	**Not Applicable.**
Municipal Utility Strategies: Includes energy efficiency programs, renewable portfolio standard, combined heat and power, and transitioning away from carbon-intensive generation.	**Not Applicable.**
Alternative Fuels: non-Petroleum Fuels: Increasing the use of non-petroleum fuels in California's transportation sector, as recommended as recommended in the CEC's 2003 and 2005 Integrated Energy Policy Reports.	**Not Applicable.**

Table IV.C-14
Project Compliance with 2006 CAT Report Greenhouse Gas Emission Reduction Strategies

STRATEGY	PROJECT COMPLIANCE
Business Transportation and Housing	
Measures to Improve Transportation Energy Efficiency: Builds on current efforts to provide a framework for expanded and new initiatives including incentives, tools and information that advance cleaner transportation and reduce climate change emissions.	**Consistent:** The Project promotes fuel conservation through design features, which promote pedestrian traffic, and programs, which encourage public transportation use.
Smart Land Use and Intelligent Transportation Systems (ITS): Smart land use strategies encourage jobs/housing proximity, promote transit-oriented development, and encourage high-density residential/commercial development along transit corridors. ITS is the application of advanced technology systems and management strategies to improve operational efficiency of transportation systems and movement of people, goods and services. Governor Arnold Schwarzenegger is finalizing a comprehensive 10-year strategic growth plan with the intent of developing ways to promote, through state investments, incentives and technical assistance, land use, and technology strategies that provide for a prosperous economy, social equity and a quality environment. Smart land use, demand management, ITS, and value pricing are critical elements in this plan for improving mobility and transportation efficiency. Specific strategies include: promoting jobs/housing proximity and transit-oriented development; encouraging high density residential/commercial development along transit/rail corridor; valuing and congestion pricing; implementing intelligent transportation systems, traveler information/traffic control, incident management; accelerating the development of broadband infrastructure; and comprehensive, integrated, multimodal/intermodal transportation planning.	**Consistent:** The Project locates retail next to residential land uses, which is considered smart land use. Because the Project is locating retail next to residential, the Project is potentially reducing the number of vehicle miles traveled. In addition, the Project is located on a transit route, which has the potential to reduce trips as well. The Project provides goods to those located near the Project site thereby improving the efficiency of goods movement.
Department of Food and Agriculture	
Enteric Fermentation: Cattle emit methane from digestion processes. Changes in diet could result in a reduction in emissions.	**Not Applicable.**
State and Consumer Services Agency	
Green Buildings Initiative: Green Building Executive Order, S-20-04 (CA 2004), sets a goal of reducing energy use in public and private buildings by 20 percent by the year 2015, as compared with 2003 levels. The Executive Order and related action plan	**Consistent.** As discussed above, the Project is initiating energy efficiency under what is required by Title 24. In addition, 2005 Title 24 amendments are 8.5 percent more efficient than those in 2001.

Table IV.C-14
Project Compliance with 2006 CAT Report Greenhouse Gas Emission Reduction Strategies

STRATEGY	PROJECT COMPLIANCE
spell out specific actions state agencies are to take with state-owned and –leased buildings. The order and plan also discuss various strategies and incentives to encourage private building owners and operators to achieve the 20 percent target.	
Public Utilities Commission (PUC)	
Accelerated Renewable Portfolio Standard: The Governor has set a goal of achieving 33 percent renewable in the State's resource mix by 2020. The joint PUC/Energy Commission September 2005 Energy Action Plan II (EAP II) adopts the 33 percent goal.	**Not Applicable.**
Investor-Owned Utility: This strategy includes energy efficiency programs, combined heat and power initiative, and electricity sector carbon policy for investor owned utility.	**Not Applicable.**
Source: Summarized from Climate Action Team Report, 2006.	

Impact AQ-5 Odors

Construction activities could generate airborne odors associated with the operation of construction vehicles (e.g., diesel exhaust) and the application of architectural coatings. However, these emissions would occur during daytime hours only for limited periods and would be restricted to the immediate vicinity of the construction site and activity. The wind would also tend to disperse odors, and such activities would not affect a substantial number of people and would result in a ***less than significant*** impact.

Typical operational uses that may result in significant odor impacts include wastewater treatment plants, sanitary landfills, transfer stations, composting facilities, petroleum refineries, asphalt batch plants, chemical manufacturing, fiberglass manufacturing, painting/coating operations, rendering plants, and coffee roasters. None of these types of uses are proposed in the Project area; therefore, creation of objectionable odors would not be a likely impact of the Project.

CUMULATIVE IMPACTS

Impact AQ-6 Cumulative Impacts

The Great Basin Unified Air Pollution Control District (GBUAPCD or District) does not have numerical thresholds to determine whether the Project would result in a cumulatively considerable net increase of PM_{10} or 0_3 precursors. However, as discussed above, 0_3 impacts are primarily the result of pollution generated in the San Joaquin Valley. Thus, the cumulative increase of 0_3 precursor emissions as a result of construction and operation of the proposed and related projects would not substantially contribute to the exceedances of the State 0_3 standard and, thus, would not be cumulatively considerable.

According to the Town's General Plan Update EIR, the increases in PM_{10} emissions associated with both construction and operation of the proposed and related projects would be considered cumulatively considerable even without development of the Project.[41] Since the Project's construction impact with regard to PM_{10} emissions would remain significant and unavoidable, the Project's cumulative construction impact on air quality would also be considered ***significant and unavoidable***.

Based on Table J of the Traffic Impact Analysis, the Project is expected to generate 17,732 VMT per day upon build-out (see Appendix J of this Draft EIR). Cumulative VMT for 2009 without the Project is expected to be 93,983 VMT per day. Therefore, total cumulative estimated VMT upon Project build-out is 111,715. This number exceeds the limit of 106,600 VMT set by the AQMP by 5,115 VMT per day. However, the 2007 General Plan Policy R.10.H prohibits the installation of all solid fuel burning appliances within any multi-unit development. Therefore, none of the 1,050 Project units would have solid-fuel burning appliances.

Based on this information, the net increase in PM_{10} emissions contributed by the Project was calculated assuming that each VMT would emit 23.8 grams of PM_{10} and that each solid-fuel burning appliance would emit 171 grams of PM_{10} per day. Therefore, the additional 5,115 VMT per day would emit 121,737 grams of PM_{10} per day more than was planned for in the AQMP. However, since none of the Project's 1,050 planned residential units will have solid-burning appliances, there will be a reduction of 179,550 grams per day in the Town's daily PM_{10} emissions. As shown in Table IV.C-15, net emissions for the Project are 57,813 less than anticipated in the AQMP. Since net emissions are less than anticipated, the Project is consistent with the AQMP for the Town of Mammoth Lakes. Therefore, cumulative operational impacts for the Project would be ***less than significant.***

Table IV.C-15
Net emissions of PM_{10} from Snowcreek VIII

Emission Source	Quantity	Emission Rate grams/day	PM_{10} Emissions grams/day
Amount of VMT over 106,600[a]	5,115	23.8	121,737
Phase II solid-fuel burning appliances[b]	-1,050	171	-179,550
		Net PM_{10} Emissions	**-57,813**

a) Based on the Traffic Impact Analysis provided in this Draft EIR.
b) Based on the assumption that no solid-fuel burning appliances will be installed in new developments
Source: Christopher A. Joseph and Associates, August 2007.

[41] *Town of Mammoth Lakes, General Plan Update EIR, October 2005, p. 4-41.*

LEVEL OF SIGNIFICANCE AFTER MITIGATION

Construction Impacts

As stated above, implementation of construction mitigation measures would reduce construction-related air quality emissions. However, because the region is in non-attainment for PM_{10}, any generation of PM_{10} emissions during construction of the Project would result in a ***significant and unavoidable*** impact.

Operational Impacts

Implementation of the mitigation measures described above would ensure that operational emissions from the Project would be reduced to a ***less than significant*** level.

Cumulative Impacts

Since the Project's construction impact with regard to PM_{10} emissions would remain significant and unavoidable, the Project's cumulative construction impact on air quality would also be considered ***significant and unavoidable***.

The recommended Project operational mitigation measures would also reduce the cumulative emissions associated with operation of the proposed and related projects to a ***less than significant*** level.