Section 4-3
Air Quality and Greenhouse Gas Emissions

The Alamo and Ulatis sites are located in Solano County, which is at the southwestern end of the Sacramento Valley Air Basin (SVAB). Air quality in the County is influenced by pollutants transported from nearby metropolitan areas, including the Sacramento and San Francisco Bay metropolitan areas. Local topography and meteorology also contributes to high ambient pollutant concentrations within the region by creating temperature inversions, which can result in increased concentrations of ground-level airborne pollutants. Pollutants of primary concern within the region include ozone (O_3), carbon monoxide (CO), and airborne particulate matter (PM); as well as localized concentrations of toxic air contaminants (TACs) and odors.

4-3.1 EXISTING CONDITIONS

4-3.1.1 Regulatory Background

Air quality within the SVAB is regulated by various jurisdictions at the federal, state, and regional level, including the U.S. Environmental Protection Agency (EPA), the California Air Resources Board (CARB), and the Yolo/Solano Air Quality Management District (YSAQMD). Each of these jurisdictions develops rules, regulations, and policies to attain the goals or directives imposed upon them through legislation. Although EPA regulations may not be superseded, both state and local regulations may be more stringent. The federal, state, regional regulatory environment and applicable laws and regulations are discussed as follows (EPA 2009, CARB 2009[b], YSAQMD 2007):

4-3.1.1.1 Federal

At the federal level, the EPA has been charged with implementing national air quality programs. The EPA's air quality mandates are drawn primarily from the Federal Clean Air Act (FCAA), which was signed into law in 1970. Congress substantially amended the FCAA in 1977 and again in 1990.

Federal Clean Air Act

The FCAA required the EPA to establish National Ambient Air Quality Standards (NAAQS or AAQS), and set deadlines for their attainment. Two types of NAAQS have been established: primary standards, which protect public health, and secondary standards, which protect public welfare from non-health-related adverse effects, such as visibility restrictions. The NAAQS are summarized in Table 4-3.1.

Table 4-3.1 Summary of Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards	National Standards	
			Primary [a]	Secondary [b]
Ozone (O_3)	1-hour	0.09 ppm	–	Same as Primary
	8-hour	0.070 ppm	0.075 ppm	
Coarse Particulate Matter (PM_{10})	AAM	20 µg/m^3	–	
	24-hour	50 µg/m^3	150 µg/m^3	
Fine Particulate Matter ($PM_{2.5}$)	AAM	12 µg/m^3	15 µg/m^3	
	24-hour	No Standard	35 µg/m^3	
Carbon Monoxide (CO)	1-hour	20 ppm	35 ppm	None
	8-hour	9 ppm	9 ppm	
	8-hour (Lake Tahoe)	6 ppm	–	
Nitrogen Dioxide (NO_2)	AAM	0.030 ppm	0.053 ppm	Same as Primary
	1-hour	0.18 ppm	0.100 ppm	
Sulfur Dioxide (SO_2)	AAM	–	0.03 ppm	–
	24-hour	0.04 ppm	0.14 ppm	–
	3-hour	–	–	0.5 ppm
	1-hour	0.25 ppm	75 ppb	–
Lead	30-day Average	1.5 µg/m^3	–	–
	Calendar Quarter	–	1.5 µg/m^3	Same as Primary
	Rolling 3-Month Average	–	0.15 µg/m^3	Same as Primary
Sulfates	24-hour	25 µg/m^3	No Federal Standards	
Hydrogen Sulfide	1-hour	0.03 ppm		
Vinyl Chloride	24-hour	0.01 ppm		
Visibility-Reducing Particle Matter	8-hour	Extinction coefficient of 0.23 per kilometer — visibility of 10 miles or more (0.07—30 miles or more for Lake Tahoe) due to particles when the relative humidity is less than 70%.		

[a] Levels necessary to protect the public health.
[b] Levels necessary to protect the public welfare from known or anticipated adverse effects.
AAM = Annual Arithmetic Mean
µg/m^3 = micrograms per cubic meter
ppb = parts per billion
ppm = parts per million
Source: CARB 2009(d)

The FCAA also required each state to prepare an air quality control plan referred to as a State Implementation Plan (SIP). The FCAA Amendments of 1990 added requirements for states with nonattainment areas to revise their SIPs to incorporate additional control measures to reduce air pollution. The SIP is periodically modified to reflect the latest emissions inventories, planning documents, and rules and regulations of the air basins as reported by their jurisdictional agencies. The EPA has responsibility to review all SIPs to determine conformance to the mandates of the FCAA, and the amendments thereof, and determine if implementation will achieve air quality goals. If the EPA determines a SIP to be inadequate, a Federal Implementation Plan (FIP) may be prepared for the nonattainment area that imposes additional control measures. Failure to submit an approvable SIP or to implement the plan within the mandated timeframe may result in sanctions being applied to transportation funding and stationary air pollution sources in the air basin.

4-3.1.1.2 State

At the state level, the CARB is the agency responsible for coordination and oversight of state and local air pollution control programs and for implementing the California Clean Air Act (CCAA) of 1988. Other CARB duties include monitoring air quality (in conjunction with air monitoring networks maintained by air pollution control districts and air quality management districts, establishing California Ambient Air Quality Standards (CAAQS) (which in many cases are more stringent than the NAAQS), and setting emissions standards for new motor vehicles. The emission standards established for motor vehicles differ depending on various factors including the model year, and the type of vehicle, fuel, and engine used.

California Clean Air Act

The CCAA requires that all air districts in the state endeavor to achieve and maintain CAAQS for O_3, CO, sulfur dioxide (SO_2), and nitrogen dioxide (NO_2) by the earliest practical date. Plans for attaining CAAQS were to be submitted to the CARB by June 30, 1991. The CAAQS are summarized in Table 4-3.1.

The CCAA specifies that districts focus particular attention on reducing the emissions from transportation and area-wide emission sources, and the act provides districts with authority to regulate indirect sources. Each district plan is required to either (1) achieve a 5% annual reduction, averaged over consecutive 3-year periods, in district-wide emissions of each non-attainment pollutant or its precursors, or (2) provide for implementation of all feasible measures to reduce emissions. Any planning effort for air quality attainment would thus need to consider both state and federal planning requirements.

Senate Bill 1771 – Greenhouse Gas Emission Reductions: Climate Change

Senate Bill 1771, chaptered in September of 2000, specified the creation of the non-profit organization, the California Climate Action Registry. The Registry helps various California entities to establish Greenhouse Gas (GHG) emissions baselines. Also, the Registry enables participating entities to voluntarily record their annual GHG emissions inventories.

Assembly Bill (AB) 32 – California Global Warming Solutions Act of 2006

In 2006, the California State Legislature adopted AB 32, the California Global Warming Solutions Act of 2006. AB 32 establishes a cap on statewide GHG emissions and sets forth the regulatory framework to achieve the corresponding reduction in statewide emissions levels. AB 32 charges the CARB, the state agency charged with regulating statewide air quality, with implementation of the act. The regulatory

steps laid out in AB 32 require the CARB to begin developing discrete early actions to reduce GHGs while also preparing a scoping plan to identify how best to reach the 2020 limit. The reduction measures to meet the 2020 target are to be adopted by the start of 2011.

The CARB identified nine discrete early action measures including regulations affecting landfills, motor vehicle fuels, and refrigerants in cars, tire pressure, port operations, and other sources in 2007 that included ship electrification at ports and reduction of high GWP gases in consumer products. Regulatory development for the remaining measures is ongoing. In December 2007, the CARB adopted a regulation requiring the largest industrial sources to report and verify their GHG emissions. The reporting regulation serves as a solid foundation to determine GHG emissions and track future changes in emission levels. In February 2008, the CARB approved a policy statement encouraging voluntary early actions and establishing a procedure for project proponents to submit quantification methods to be evaluated by the CARB. The CARB, along with California's local air districts and the California Climate Action Registry, is working to implement this program. In December 2008, a scoping plan was approved by the CARB, which provides the outline for actions to reduce GHGs in California (California Air Pollution Control Officers Association [CAPCOA] 2009[b]).

Assembly Bills 1807 & 2588 – Air Toxics

Within California, TACs are regulated primarily through AB 1807 (Tanner Air Toxics Act) and AB 2588 (Air Toxics Hot Spots Information and Assessment Act of 1987). The Tanner Air Toxics Act sets forth a formal procedure for the CARB to designate substances as TACs. This includes research, public participation, and scientific peer review before the CARB designates a substance as a TAC. Existing sources of TACs that are subject to the Air Toxics Hot Spots Information and Assessment Act are required to: (1) prepare a toxic emissions inventory; (2) prepare a risk assessment if emissions are significant; (3) notify the public of significant risk levels; and (4) prepare and implement risk reduction measures (CARB 2005, 2009[e]).

4-3.1.1.3 Yolo-Solano Air Quality Management District

The YSAQMD is tasked with achieving and maintaining healthful air quality for its residents. This is accomplished by establishing programs, plans, and regulations enforcing air pollution control rules in order to attain all CAAQS and NAAQS and minimize public exposure to airborne toxins and nuisance odors.

The YSAQMD has adopted several attainment plans to achieve state and federal air quality standards and comply with CCAA and FCAA requirements. The YSAQMD continuously monitors its progress in implementing attainment plans and must periodically report to the CARB and the EPA. The YSAQMD, in partnership with the five air districts in the Sacramento Metropolitan Area, the CARB, and the Sacramento Area Council of Governments, periodically revises its attainment plans to reflect new conditions and requirements in accordance with schedules mandated by the CCAA and FCAA.

The 1994 Sacramento Area Regional Ozone Attainment Plan is the current federal ozone plan for the YSAQMD, and sets out stationary source control programs and statewide mobile source control programs for attainment of the 1-hour ozone standard. The districts of the Sacramento Region have also prepared an 8-hour Ozone Rate of Progress Plan that shows a 3 percent per year emission reduction in volatile organic compounds (VOCs) (or the nitrogen oxides [NO_x] equivalent) for 6 years (through 2008). This plan continues the strategies found in the 1-hour ozone SIP. The EPA's June 2005 revocation of the 1-hour ozone standard and enacting the 8-hour ozone standard required the air districts and the CARB to

prepare a new attainment demonstration SIP. An 8-hour ozone attainment demonstration plan for the Sacramento Metropolitan Area is currently under development and will contain additional control measures to demonstrate that the region will attain the 8-hour standard by the target date, year 2013.

The CCAA requires districts to adopt air quality attainment plans and to review and revise their plans to address deficiencies in interim measures of progress once every three years. The AQAP was adopted in 1992 and most recently updated in 2003. The YSAQMD's primary means of implementing air quality plans is by adopting rules and regulations. The H&SC §42300 et. seq. authorizes districts to adopt rules and regulations and to pursue civil and criminal penalties for violations. The YSAQMD rulebook contains more than 85 rules. Some new rules adopted by the YSAQMD apply to sources never before regulated, such as Rule 2.40 - Wood Burning Appliances, which prohibits installation of any new traditional "open hearth" type fireplaces within the YSAQMD's jurisdiction.

In addition to the YSAQMD's primary role of controlling stationary sources of pollution, the YSAQMD is required to implement transportation control measures and identify indirect source control programs to reduce mobile source emissions. To accomplish this, the YSAQMD works closely with cities and counties and with regional transportation planning agencies. The YSAQMD has also enhanced its participation in CEQA where it actively reviews and comments on prepared environmental documents. Also, the YSAQMD encourages cities and counties to include air quality policies for reducing emissions generated by indirect sources in their general plans. The YSAQMD also coordinates with the transportation planning agencies to help them comply with pertinent provisions of the FCAA and the CCAA, as well as related transportation legislation (YSAQMD 2007).

4-3.1.2 Affected Environment

4-3.1.2.1 Topography and Meteorology

The SVAB encompasses eleven counties including all of Shasta, Tehama, Glenn, Colusa, Butte, Sutter, Yuba, Sacramento, and Yolo counties, the westernmost portion of Placer County and the northeastern half of Solano County. The SVAB is bounded by the North Coast Ranges on the west and Northern Sierra Nevada Mountains on the east. The intervening terrain is relatively flat.

Hot dry summers and mild rainy winters characterize the Mediterranean climate of the SVAB. During the year, the temperature may range from 20 to 115 degrees Fahrenheit with summer highs usually in the 90s and winter lows occasionally below freezing. Average annual rainfall is about 20 inches, and the rainy season generally occurs from November through March. The prevailing winds are moderate in strength and vary from moist clean breezes from the south to dry land flows from the north.

The mountains surrounding the SVAB create a barrier to airflow, which can trap air pollutants under certain meteorological conditions. The highest frequency of air stagnation occurs in the autumn and early winter when large high-pressure cells collect over the Sacramento Valley. The lack of surface wind during these periods and the reduced vertical flow caused by less surface heating reduces the influx of outside air and allows air pollutants to become concentrated in a stable volume of air. The surface concentrations of pollutants are highest when these conditions are combined with temperature inversions that trap pollutants near the ground.

The ozone season (May through October) in the Sacramento Valley is characterized by stagnant morning air or light winds with the delta sea breeze arriving in the afternoon out of the southwest. Usually the

evening breeze transports the airborne pollutants to the north out of the Sacramento Valley. During about half of the days from July to September, however, a phenomenon called the "Schultz Eddy" prevents this from occurring. Instead of allowing for the prevailing wind patterns to move north carrying the pollutants out, the Schultz Eddy causes the wind pattern to circle back to the south. Essentially, this phenomenon causes the air pollutants to be blown south toward the southern portion of the valley. This phenomenon has the effect of exacerbating the pollution levels in the area and increases the likelihood of violating federal or state standards. The eddy normally dissipates around noon when the delta sea breeze arrives.

4-3.1.2.2 Existing Sensitive Receptors

The term "sensitive receptors" refers to specific population groups, as well as the land uses where they would reside for long periods. Commonly identified sensitive population groups are children, the elderly, the acutely ill, and the chronically ill. Sensitive land uses located within the City include residences, schools, playgrounds, childcare centers, retirement homes or convalescent homes, hospitals, and clinics. Within the proposed project area, sensitive receptors consist predominantly of rural residential dwellings located at varying distances from the proposed detention basin sites and along nearby roadways.

4-3.1.3 Criteria Air Pollutants

For the protection of public health and welfare, the FCAA requires the EPA established NAAQS for various pollutants (refer to Table 4-3.1). These pollutants are referred to as "criteria" pollutants because the EPA publishes criteria documents to justify the choice of standards. These standards define the maximum amount of an air pollutant that can be present in ambient air without harm to the public's health. An ambient air quality standard (AAQS) is generally specified as a concentration averaged over a specific time period, such as one hour, eight hours, 24 hours, or one year. The different averaging times and concentrations are meant to protect against different exposure effects. The FCAA allows states to adopt additional or more health-protective standards.

Criteria air pollutants, common sources, and associated health and welfare effects are summarized in Table 4-3.2. Within the YSAQMD, criteria air pollutants of primary concern, with regard to human health, include ozone and PM. As depicted in Table 4-3.2, exposure to increased pollutant concentrations of O3, PM, and CO can result in various heart and lung ailments, cardiovascular and nervous system impairment, and death.

4-3.1.3.1 Ambient Air Quality

Air pollutant concentrations are measured at several monitoring stations in the County. The Vacaville-Ulatis Road air quality monitoring station is the closest representative monitoring site to the proposed project site. The Vacaville-Ulatis Road monitoring station monitors ambient concentrations of ozone. The nearest ambient air quality monitoring station providing ambient monitoring data for CO, and airborne particulates is the Vallejo-304 Tuolumne Street ambient air quality monitoring station. Ambient monitoring data for the last three years of available measurement data (i.e., 2006 through 2008) are summarized in Table 4-3.3. As depicted, the state (1-hour) and federal (1-hour/8-hour) ozone standards were exceeded on numerous occasions during the past 3 years. The standards for suspended particulates (i.e., PM_{10} and $PM_{2.5}$) have also been exceeded on various occasions during the past 3 years (CARB 2009[a]).

Table 4-3.2 Criteria Air Pollutants - Summary of Common Sources and Effects

Pollutant	Major Man-Made Sources	Human Health & Welfare Effects
Particulate Matter (PM_{10} & $PM_{2.5}$)	Power plants, steel mills, chemical plants, unpaved roads and parking lots, wood-burning stoves and fireplaces, automobiles, and others.	Increased respiratory symptoms, such as irritation of the airways, coughing, or difficulty breathing; aggravated asthma; development of chronic bronchitis; irregular heartbeat; nonfatal heart attacks; and premature death in people with heart or lung disease. Impairs visibility (haze).
Ozone (O_3)	Formed by a chemical reaction between volatile organic compounds (VOC) and nitrogen oxides (NO_x) in the presence of sunlight. Motor vehicle exhaust, industrial emissions, gasoline storage and transport, solvents, paints, and landfills.	Irritates and causes inflammation of the mucous membranes and lung airways; causes wheezing, coughing and pain when inhaling deeply; decreases lung capacity; aggravates lung and heart problems. Damages plants; reduces crop yield. Damages rubber, some textiles, and dyes.
Sulfur Dioxide (SO_2)	A colorless, nonflammable gas formed when fuel containing sulfur is burned; when gasoline is extracted from oil; or when metal is extracted from ore. Examples are petroleum refineries, cement manufacturing, metal processing facilities, locomotives, and ships.	Respiratory irritant. Aggravates lung and heart problems. In the presence of moisture and oxygen, sulfur dioxide converts to sulfuric acid, which can damage marble, iron, and steel; damage crops and natural vegetation. Impairs visibility. Precursor to acid rain.
Carbon Monoxide (CO)	An odorless, colorless gas formed when carbon in fuel is not burned completely;' a component of motor vehicle exhaust.	Reduces the ability of blood to deliver oxygen to vital tissues, affecting the cardiovascular and nervous system. Impairs vision, causes dizziness, and can lead to unconsciousness or death.
Nitrogen Dioxide (NO_2)	A reddish-brown gas formed during fuel combustion for motor vehicles and industrial sources. Motor vehicles, electric utilities, and other sources that burn fuel.	Respiratory irritant; aggravates lung and heart problems. Precursor to ozone and acid rain. Contributes to global warming, and nutrient overloading which deteriorates water quality. Causes brown discoloration of the atmosphere.
Lead	Metallic element emitted from metal refineries, smelters, battery manufacturers, iron and steel producers, and use of leaded fuels by racing and aircraft industries.	Anemia, high blood pressure, brain and kidney damage, neurological disorders, cancer, lowered IQ. Affects animals, plants, and aquatic ecosystems.

Source: CARB 2009(c), CAPCOA 2009(a)

Table 4-3.3 Summary of Ambient Air Quality Monitoring Data [1]

Pollutant	2006	2007	2008
OZONE (O_3)			
Maximum concentration (1-hour/8-hour average)	0.108/0.087	0.103/0.078	0. 113/0.103
Number of days state/national 1-hour standard exceeded	4/0	1/0	5/0
Number of days national 8-hour standard exceeded	6	2	6
CARBON MONOXIDE (CO)			
Maximum concentration (1-hour/8-hour average)	3.7/2.94	3.3/2.70	2.7/2.31
Number of days state 1-hour/8-hour standard exceeded	0/0	0/0	0/0
Number of days national 1-hour/8-hour standard exceeded	0/0	0/0	0/0
SUSPENDED PARTICULATE MATTER (PM_{10})			
Maximum concentration (state/national)	50.1/46.6	52.4/49.1	43.6/42.1
Number of days state standard exceeded (measured/calculated[2])	0/0	2/12.6	0/0
Number of days national standard exceeded (measured/calculated[2])	0/0	0/0	0/0
SUSPENDED PARTICULATE MATTER ($PM_{2.5}$)			
Maximum concentration (state/national)	44.0/42.2	41.5/40.8	51.2/50.0
Number of days national standard exceeded (measured/calculated[2])	2/5.9	4/12.1	7/7.1

[1] Ozone ambient concentrations obtained from the Vacaville-Ulatis Drive ambient air quality monitoring station. Ambient concentrations of remaining criteria pollutants are not monitored at the Vacaville station. Ambient concentrations data for remaining criteria pollutants presented in this table were obtained from the nearest ambient air quality monitoring station (Vallejo-304 Tuolumne Street).
[2] Measured days are those days that an actual measurement was greater than the level of the state daily standard or the national daily standard. Measurements are typically collected every six days. Calculated days are the estimated number of days that a measurement would have been greater than the level of the standard had measurements been collected every day. The number of days above the standard is not necessarily the number of violations of the standard for the year.
ppm = Parts per million by volume
$\mu g/m^3$ = Micrograms per cubic meter
NA = Insufficient Data Available
Sources: CARB 2009(a)

4-3.1.3.2 Attainment Status

Under the CCAA, the CARB is required to designate areas of the state as attainment, nonattainment, or unclassified with respect to applicable standards. An "attainment" designation for an area signifies that pollutant concentrations did not violate the applicable standard in that area. A "nonattainment" designation indicates that a pollutant concentration violated the applicable standard at least once, excluding those occasions when a violation was caused by an exceptional event, as defined in the criteria. Depending on the frequency and severity of pollutants exceeding applicable standards, the nonattainment designation can be further classified as serious nonattainment, severe nonattainment, or extreme

nonattainment, with extreme nonattainment being the most severe of the classifications. An "unclassified" designation signifies that the data do not support either an attainment or nonattainment status. The CCAA divides districts into moderate, serious, and severe air pollution categories, with increasingly stringent control requirements mandated for each category.

The EPA designates areas for ozone, CO, and NO_2 as "does not meet the primary standards," "cannot be classified," or "better than national standards." For SO_2, areas are designated as "does not meet the primary standards," "does not meet the secondary standards," "cannot be classified," or "better than national standards." However, the CARB terminology of attainment, nonattainment, and unclassified is more frequently used. The sub-categories for nonattainment status; serious, severe, and extreme; are also used by the EPA. In 1991, new nonattainment designations were assigned to areas that had previously been classified as Group I, II, or III for PM_{10} based on the likelihood that they would violate national PM_{10} standards. All other areas are designated "unclassified." YSAQMD's current ambient air quality attainment designations are summarized in Table 4-3.4 (CARB 2009[b], YSAQMD 2009).

Table 4-3.4 YSAQMD Attainment Designation Status

Pollutant	Averaging Time	State Standards	National Standards
Ozone (O_3)	1-Hour 8-Hour	Non-attainment Non-attainment	N/A Non-attainment
Carbon Monoxide (CO)	1-Hour 8-Hour	Attainment Attainment	Unclassified/Attainment Unclassified/Attainment
Nitrogen Dioxide (NO_2)	1-Hour Annual	Attainment N/A	N/A Attainment
Sulfur Dioxide (SO_2)	1-Hour 24-Hour Annual	Attainment Attainment N/A	N/A Attainment Attainment
Coarse Particulate Matter (PM_{10})	24-Hour Annual Average	Non-attainment Non-attainment	Unclassified N/A
Fine Particulate Matter ($PM_{2.5}$)	24-Hour Annual Average	N/A N/A	Unclassified Unclassified
Sulfates	24-Hour	Attainment	N/A
Lead	30-Day Average Calendar Quarter	Attainment N/A	N/A Attainment
Hydrogen Sulfide	1-Hour	Attainment	N/A
Vinyl Chloride	24-Hour	Attainment	N/A
Visibility Reducing Particles	8-Hour	Attainment	N/A

Notes: N/A – Not applicable, state or federal standard does not exist for the combination of pollutant and averaging time. Unclassified areas are those for which air monitoring has not been conducted but which are assumed to be in attainment.
Source: CARB 2009(b), YSAQMD 2009

Toxic Air Contaminants

TACs are not considered criteria pollutants in that the FCAA and the CCAA do not address them specifically through the setting of NAAQS or CAAQS. Instead, the EPA and the CARB regulate Hazardous Air Pollutants (HAPs) and TACs, respectively, through statutes and regulations that generally require the use of the maximum or best available control technology to limit emissions. In conjunction with rules developed by air districts, they establish the regulatory framework for TACs. At the national levels, the EPA has established National Emission Standards for HAPs (NESHAPs), as required by the FCAA Amendments. These are technology-based source-specific regulations that limit allowable emissions of HAPs.

Within California, TACs are regulated primarily through the Tanner Air Toxics Act (AB 1807) and the Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588). The Tanner Act sets forth a formal procedure for the CARB to designate substances as TACs. This includes research, public participation, and scientific peer review before the CARB designates a substance as a TAC. Existing sources of TACs that are subject to the Air Toxics Hot Spots Information and Assessment Act are required to: (1) prepare a toxic emissions inventory; (2) prepare a risk assessment if emissions are significant; (3) notify the public of significant risk levels; and (4) prepare and implement risk reduction measures.

At the state level, the CARB has authority for the regulation of emissions from motor vehicles, fuels, and consumer products. Most recently, Diesel-exhaust particulate matter (DPM) was added to the CARB list of TACs. DPM is the primary TACs of concern for mobile sources. Of all controlled TACs, emissions of DPM are estimated to be responsible for about 70 percent of the total ambient TAC risk. The CARB has made the reduction of the public's exposure to DPM one of its highest priorities, with an aggressive plan to require cleaner diesel fuel and cleaner diesel engines and vehicles (CARB 2005).

The local air districts have the authority over stationary or industrial sources. All projects that require air quality permits from the YSAQMD are evaluated for TAC emissions. The YSAQMD limits emissions and public exposure to TACs through a number of programs. The YSAQMD prioritizes TAC-emitting stationary sources, based on the quantity and toxicity of the TAC emissions and the proximity of the facilities to sensitive receptors. The YSAQMD requires a comprehensive health risk assessment for facilities that are classified in the significant-risk category, pursuant to AB 2588.

4-3.1.3.3 Land Use Compatibility with TAC Emission Sources

The CARB published an informational guide entitled: "Air Quality and Land Use Handbook: A Community Health Perspective" (Handbook) in 2005. The purpose of this guide is to provide information to aid local jurisdictions in addressing issues and concerns related to the placement of sensitive land uses near major sources of air pollution. The CARB's Handbook includes recommended separation distances for various land uses that are based on relatively conservative estimations of emissions based on source-specific information. However, these recommendations are not site specific and should not be interpreted as defined "buffer zones". It is also important to note that the recommendations of the Handbook are advisory and need to be balanced with other state and local policies (CARB 2005).

4-3.1.3.4 California Diesel-Risk Reduction Plan

In September 2000, the CARB adopted the DRRP, which recommends many control measures to reduce the risks associated with DPM and achieve a goal of 75 percent PM reduction by 2010 and 85 percent by 2020. The DRRP incorporates measures to reduce emissions from diesel-fueled vehicles and stationary diesel-fueled engines. Ongoing efforts of the CARB to reduce diesel-exhaust emissions from these sources include the development of specific statewide regulations, which are designed to further reduce DPM emissions from these sources. The goal of each regulation is to make diesel engines as clean as possible by establishing state-of-the-art technology requirements or emission standards to reduce DPM emissions.

Since the initial adoption of the DRRP in September of 2000, the CARB has adopted numerous rules related to the reduction of DPM from mobile sources, as well as, the use of cleaner burning fuels.

Transportation sources addressed by these rules include public transit buses, school buses, on-road heavy-duty trucks, and off-road heavy-duty equipment. Some of the more notable rules and programs recently adopted by the CARB are discussed in more detail, as follows (CARB 2005, CARB 2009[e]):

Standards for New Off-Road Diesel Engines

CARB has worked closely with the EPA on developing new PM and NO_x standards for engines used in offroad equipment such as backhoes, graders, and farm equipment. The EPA has proposed new standards that would reduce the emission from off-road engines to similar levels to the on-road engines discussed above by 2010 – 2012. These standards will reduce DPM emission by over 90 percent from new off-road engines currently sold in California.

Standards for New On-Road Diesel Engines

In 2001, the CARB adopted new PM and NO_x emission standards to clean up large diesel engines that power big-rig trucks, trash trucks, delivery vans and other large vehicles. The new standard for PM took effect in 2007 and reduces emissions to 0.01 gram of PM per brake horsepower-hour (g/bhp-hr). This is a 90-percent reduction from the pre-2007 PM standard. New engines will meet the 0.01 g/bhp-hr PM standard with the aid of diesel particulate filters that trap the PM before exhaust leaves the vehicle.

New Regulations for In-Use Diesel Engines

Over the past few years, the CARB has developed various regulations to reduce PM emissions and other pollutants from diesel engines. Another six to eight regulations are planned for adoption over the next two years. These regulations have relied on four approaches to significantly reduce emissions from diesel engines: (1) Replace/repower (replace the existing engine with a new diesel engine Retrofit); (2) Apply a CARB-verified diesel emission control system to the existing engine and fuel system; (3) Retire the vehicle or replace with an alternative-fueled vehicle or vehicle with a new, cleaner diesel engine; and (4) Operational modification (i.e., reduced operating time, reduced idling, or use of electric power). In some instances, these new regulations also reduce smog-forming emissions such as NO_x. Some of the more recent and notable regulations related to the reduction of DPM from in-use diesel engines are discussed in more detail, as follows (CARB 2009[e]).

Odors

Although offensive odors rarely cause any physical harm, they can be very unpleasant, leading to considerable stress among the public and often generating citizen complaints to local governments and air districts. Common types of facilities that have been known to produce odors, including wastewater treatment facilities, chemical manufacturing plants, painting/coating operations, feed lots/dairies, composting facilities, landfills, and transfer stations. Because offensive odors rarely cause any physical harm and no requirements for their control are included in state or federal air quality regulations, the YSAQMD has no rules or standards related to odor emissions other than its nuisance rule. Any actions related to odors are based on citizen complaints to local governments and the YSAQMD.

Greenhouse Gas Emissions & Climate Change

The earth's climate has been warming for the past century. It is believed that this warming trend is related to the release of certain gases into the atmosphere. GHG absorb infrared energy that would otherwise escape from the earth. As the infrared energy is absorbed, the air surrounding the earth is heated. An overall warming trend has been recorded since the late 19th century, with the most rapid

warming occurring over the past two decades. The 10 warmest years of the last century all occurred within the last 15 years. It appears that the decade of the 1990s was the warmest in human history. Human activities have been attributed to an increase in the atmospheric abundance of GHGs. The more commonly recognized GHGs include carbon dioxide (CO_2), CH_4, N_2O, water vapor, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride (CARB 2009[f]).

There are uncertainties as to exactly what the climate changes will be in various local areas of the earth, and what the effects of clouds will be in determining the rate at which the mean temperature will increase. There are also uncertainties associated with the magnitude and timing of other consequences of a warmer planet: sea level rise, spread of certain diseases out of their usual geographic range, the effect on agricultural production, water supply, sustainability of ecosystems, increased strength and frequency of storms, extreme heat events, air pollution episodes, and the consequence of these effects on the economy.

Emissions of GHGs contributing to global climate change are largely attributable to human activities associated with industrial/manufacturing, utility, transportation, residential, and agricultural sectors. About three-quarters of human emissions of CO_2 to the global atmosphere during the past 20 years are due to fossil fuel burning. Atmospheric concentrations of CO_2, CH_4, and N_2O have increased 31 percent, 151 percent, and 17 percent respectively since the year 1750 (CARB 2009[f]). GHG emissions are typically expressed in CO_2-equivalents (CO_2e), based on the GHG's Global Warming Potential (GWP). The GWP is dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. For example, one ton of CH_4 has the same contribution to the greenhouse effect as approximately 21 tons of CO_2. Therefore, CH_4 is a much more potent GHG than CO_2 (CARB 2009[f]). .

Worldwide, California is ranked as the 12th largest emitter of GHGs (California Energy Commission 2009). Based on the most recent GHG emissions inventory, California's gross annual emissions of GHGs in 2004 totaled approximately 500 million metric tons (MMT) of CO_2e. Most of California's emissions, approximately 81 percent, consist of CO_2 produced from fossil fuel combustion. The transportation sector is the single largest category of California's GHG emissions, accounting for approximately 39 percent of the state's total GHG emissions, followed by electricity consumption (from both in-state and out-of-state providers), which accounts for a total of roughly 28 percent of the state's total GHG emissions. The contribution from each of the various other use sectors contribute roughly 6 to 10 percent each to the total GHG emissions inventory (CARB 2009[f]).

4-3.1.3.5 Existing Emissions

Alamo Site

The Alamo site consists of approximately 79 acres of agricultural land currently in orchard production. Agricultural use is seasonal, predominantly during the spring and summer months. Emissions associated with the existing orchard operations are largely associated with the occasional use of off-road equipment (i.e., tractors and forklifts). To a lesser extent, on-road employee and haul truck trips also contribute to existing emissions generated by current agricultural operations. Estimated daily and annual emissions are summarized in Table 4-3.5.

Table 4-3.5 Existing Emissions: Alamo Site

Construction Year/Source	Estimated Emissions [1]				
	ROG	NO_X	PM_{10}	$PM_{2.5}$	CO_2
Estimated Daily Emissions (lbs/day)					
Off-Road Equipment Exhaust	8.28	48.96	3.96	3.60	7,381.92
Worker Commute/On-Road Light-Duty Vehicles	0.16	0.18	0.02	0.02	197.28
Heavy-Duty Diesel Haul Trucks	0.24	3.04	0.14	0.13	336.88
Maximum Daily Emissions:	8.70	52.18	4.12	3.75	7,916.08
Estimated Annual Emissions (tons/year)					
Off-Road Equipment Exhaust	0.06	0.47	0.02	0.02	71.02
Worker Commute/On-Road Light-Duty Vehicles	Neg	Neg	Neg	Neg	1.97
Heavy-Duty Diesel Haul Trucks	Neg	0.02	Neg	Neg	1.68
Total:	0.06	0.49	0.02	0.02	74.67

[1] Totals may not sum due to rounding. Emissions were calculated based on estimated operational information provided by the project applicant (i.e., offroad equipment usage, number of employee haul trucks), as well as, emission factors obtained from the EPA and OFFROAD2007 (version 9.2.4) computer program. Includes emissions associated with the use of off-road equipment, employee vehicle, and haul truck trips. Ground-disturbing activities (i.e., tilling) were not assumed for typical orchard operations. Modeling assumptions and results are included in Appendix E of this report.
Neg=Negligible Emissions (i.e., less than 0.00 tons/year)
ROG=reactive organic gases

Ulatis Site

The Ulatis site consists of approximately 50 acres of agricultural land currently fallow but formerly in alfalfa production. Agricultural use is seasonal, predominantly during the spring and summer months. Emissions associated with agricultural operations are typical to the site and are largely associated with the occasional use of off-road equipment (i.e., tractors). To a lesser extent, on-road employee and haul truck trips also contribute to existing emissions generated by agricultural operations. Fugitive emissions are also generated during end of season preparation, which can result in elevated daily emissions of airborne PM in the project area. Estimated daily and annual emissions from agricultural uses are summarized in Table 4-3.6.

Table 4-3.6 Existing Emissions: Ulatis Site

Construction Year/Source	Estimated Emissions [1]				
	ROG	NO_X	PM_{10}	$PM_{2.5}$	CO_2
Estimated Daily Emissions (lbs/day)					
Off-Road Equipment Exhaust	2.64	25.80	0.84	0.72	3,928.56
Fugitive Dust-End of Season Preparation	--	--	125.00	26.25	--
Worker Commute/On-Road Light-Duty Vehicles	0.03	0.03	Neg	Neg	32.88
Heavy-Duty Diesel Haul Trucks	0.24	3.04	0.14	0.13	336.88
Maximum Daily Emissions:	2.91	28.87	125.84	27.10	4,298.32
Estimated Annual Emissions (tons/year)					
Off-Road Equipment Exhaust	0.04	0.41	0.01	0.01	62.86
Fugitive Dust- End of Season Preparation	--	--	0.06	0.01	--
Worker Commute/On-Road Light-Duty Vehicles	Neg	Neg	Neg	Neg	1.10
Heavy-Duty Diesel Haul Trucks	Neg	0.01	Neg	Neg	1.18
Total:	0.04	0.42	0.08	0.03	65.14

[1] Totals may not sum due to rounding. Emissions were calculated based on estimated operational information provided by the project applicant (i.e., offroad equipment usage, number of employee haul trucks), as well as, emission factors obtained from the EPA and OFFROAD2007 (version 9.2.4) computer program. Includes emissions associated with the use of off-road equipment, employee vehicle, and haul truck trips. Fugitive dust emissions assume tilling would occur one day per year over the project area (53 acres) based on an emissions rate of 10 lbs PM_{10}/acre of disturbance and 2.1 lbs $PM_{2.5}$/acre of disturbance. Modeling assumptions and results are included in Appendix E of this report.

ROG=reactive organic gases

4-3.2 SIGNIFICANCE CRITERIA

The air quality impact analysis is based on criteria identified in Appendix G of the CEQA Guidelines (Environmental Checklist), published by the State Office of Planning and Research (OPR), identified as follows:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project is non-attainment under applicable NAAQS or CAAQS (including releasing emissions, which exceed quantitative thresholds for ozone-precursors);
- Expose sensitive receptors to substantial pollutant concentrations; or
- Create objectionable odors affecting a substantial number of people.

4-3.2.1 Significance Thresholds

The YSAQMD thresholds of significance are based on the environmental checklist criteria discussed above. Table 4-3.7 summarizes the project-level thresholds of significance as established by YSAQMD for PM less than 10 micrometers in diameter (PM_{10}), CO, and the precursors to ozone, which are reactive organic gases (ROG) and NO_X. The thresholds apply to both construction and operational impacts.

Table 4-3.7. YSAQMD Thresholds of Significance

Pollutant	Thresholds
ROG	10 tons/year
NO_X	10 tons/year
PM10	80 lbs/day
CO	Violation of a CAAQS

Notes: Thresholds apply to both construction and operational activities.
Source: YSAQMD 2007

In addition to establishing quantitative significance thresholds for criteria pollutants, the YSAQMD has adopted thresholds of significance related to toxics, odors, and cumulative impacts. These thresholds are discussed, as follows (YSAQMD 2007):

4-3.2.1.1 Toxic Air Contaminants Thresholds

Proposed development projects that have the potential to expose the public to TACs from stationary sources in excess of the following thresholds would be considered to have a significant air quality impact. These thresholds are based on the YSAQMD Risk Management Policy.

- Probability of contracting cancer for the Maximally Exposed Individual (MEI) equals to 10 in one million or more.

- Ground-level concentrations of non-carcinogenic TACs would result in a Hazard Index equal to 1 for the MEI or greater.

While the YSAQMD Risk Management Policy provides a basis for a threshold for TACs from stationary sources, this policy does not cover TACs from mobile sources. The YSAQMD has no permitting or other regulatory authority over mobile sources. While the district continues to evaluate a threshold of significance for mobile source TAC, no specific mobile source TAC threshold has yet been recommended. For purposes of this analysis and in the absence of a YSAQMD -recommended threshold specific to mobile sources, this threshold has been applied to mobile sources.

4-3.2.1.2 Offensive Odors Thresholds

While offensive odors rarely cause any physical harm, they can be very unpleasant, leading to considerable distress among the public and often generating citizen complaints to local governments and the YSAQMD. The general nuisance rule (H&SC §41700 and District Rule 2.5) is the basis for this threshold. A project may reasonably be expected to have a significant adverse odor impact where it "generates odorous emissions in such quantities as to cause detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which may endanger the comfort, repose, health, or

safety of any such person or the public, or which may cause, or have a natural tendency to cause, injury or damage to business or property."

4-3.2.1.3 Cumulative Impact Thresholds

In accordance with YSAQMD recommendations, if a proposed project would individually have a significant air quality impact (see above for project level Thresholds of Significance) the project would also be considered to have a significant cumulative impact.

4-3.2.1.4 Greenhouse Gas Thresholds

Background Information

While the CEQA Guidelines call for the evaluation of climate change and GHG emission increases, at the present time there are no federal, state, or locally adopted thresholds for the evaluation of project-generated short-term or long-term GHG emissions and/or contribution to global climate change. Public agencies, including the CARB, and various air districts within the state, are in the process of developing thresholds to be used for the determination of the significance of project-generated GHG emissions. The basis used for the development and implementation of these proposed draft thresholds varies, including the application of tiered analyses, incorporation of performance-based standards, and/or quantifiable thresholds. The following discussion summarizes various approaches and methodologies for addressing GHG emissions.

CALIFORNIA AIR RESOURCES BOARD (CARB)

On October 24, 2008, the CARB released its Preliminary Draft Staff Proposal, Recommended Approaches for Setting Interim Significance Thresholds for GHGs under the California Environmental Quality Act. A key aspect of the CARB's recommended approach recognizes that different GHG thresholds of significance may apply to different types of projects, referred to as sector-specific thresholds. Two primary reasons that sector-specific thresholds are appropriate are: (1) some sectors contribute more substantially to the problem, and therefore should have a greater obligation for emissions reductions, and, (2) looking forward, there are differing levels of emissions reductions expected from different sectors in order to meet California's climate objectives. The CARB also believes that different types of thresholds, both quantitative and qualitative, as well as, the application of performance-based standards, can apply to different sectors. For the industrial sector, the CARB's proposed threshold consists of a quantitative threshold of 7,000 metric tons (MTs) CO_2e for operational emissions (excluding transportation), and performance standards for construction and transportation emissions. The CARB has indicated that a similar approach to establish a GHG significance threshold is under development for other sectors, including residential and commercial developments.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT (SCAQMD)

SCAQMD has generally recommended a tiered approach to establishing a GHG significance threshold. The tiered approach proposed by SCAQMD would require quantification of GHG emissions for all projects that are subject to CEQA. For industrial projects, SCAQMD has proposed a quantitative

threshold of 10,000 MT CO_2e per year. For residential and commercial projects, the SCAQMD recommended a quantitative threshold of 3,000 MT CO_2e /year, which is estimated to capture 90 percent of the sector-specific emissions within the SCAQMD. These thresholds have not been adopted (SCAQMD 2008).

SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT (SJVAPCD)

The SJVAPCD's significance threshold guidance focuses on the use of "performance-based" standards rather than quantitative thresholds. Accordingly, a project would be considered to have a less-than-significant impact if the project would: (1) comply with an adopted statewide, regional, or local plan for reduction or mitigation of GHG emissions, or (2) achieve a GHG emission reductions target by using approved best performance standards, or (3) achieve AB 32 targeted GHG reductions (29 percent) compared to business as usual. The SJVAPCD, however, recognizes that performance standards have not been developed for all sources of GHG emissions and is currently in the process of developing recommended performance standards for various sources (SJVAPCD 2009).

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT (SMAQMD)

The SMAQMD recommends that thresholds of significance for GHG emissions should be related to AB 32's GHG reduction goals. For example, a possible threshold of significance could be to determine whether a proposed general or area plan's emissions would substantially hinder the state's ability to attain the goals identified in AB 32 (i.e., reduction of statewide GHG emissions to 1990 levels by 2020). In this example, a numeric GHG reduction target representative of 1990 levels despite planned population and employment growth (e.g., 30 percent below current levels) should be adopted as a policy within the lead agency's general or area plan. Emission reduction measures to achieve the target could then be developed within the general or area plan, or within a companion Climate Action Plan (SMAQMD 2009).

Another possible threshold option could include determining whether the population and employment growth and resultant GHG emissions of the proposed plan are consistent with the state's strategy to achieve the 2020 GHG emissions limit, as outlined in the CARB's Climate Change Scoping Plan (December 2008). This option could employ an efficiency-based GHG metric such as per-capita emissions, per-job emissions, and a "service population" metric that combines per-capita and per-job emissions, or other similar metrics (SMAQMD 2009).

BAY AREA AIR QUALITY MANAGEMENT DISTRICT (BAAQMD)

The BAAQMD has developed proposed thresholds for the evaluation of GHG emissions at both the project-level and plan-level of analysis. At the project-level, excluding stationary sources, the BAAQMD recommends the following quantitative GHG significance thresholds for operational emissions: (1) compliance with qualified GHG reduction strategy; or (2) 1,100 MT CO_2e per year; or (3) 4.6 MT CO_2e /service population (residents plus employees)/year. For proposed stationary source operational emissions, the BAAQMD recommends a significance threshold of 10,000 MT CO_2e /year. The BAAQMD has not adopted a quantitative significance threshold for short-term construction activities. However, the BAAQMD recommends that lead agencies incorporate BMPs to reduce GHG emissions associated with short-term construction activities. Such measures include, but are not limited to, the use of newer, low-emission vehicles and equipment; use of local building materials; and recycling and/or reuse of construction-generated waste or demolition materials (BAAQMD 2009). These thresholds were

developed, in part, by taking into account the GHG emission reduction goals specific to the Bay Area, per the requirements of AB32. As a result, these quantitative thresholds should not be applied outside the BAAQMD.

Significance Threshold Used for This Analysis

As noted above, the California Natural Resource Agency recently adopted Amendments to the CEQA Guidelines for GHG emissions. These Amendments were adopted by the California Natural Resource Agency on December 30, 2009. On February 16, 2010, the Office of Administrative Law approved the Amendments, and filed them with the Secretary of State for inclusion in the California Code of Regulations. These CEQA Amendments became effective on March 18, 2010. The CEQA amendments include revisions to the Appendix G Initial Study Checklist questions to address project-generated GHG emissions and contribution to climate change. Accordingly, a proposed project would be considered to have a significant impact to climate change if it would: a) Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or, b) Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.

At the present time, there are no federal, state, or locally adopted thresholds for the evaluation of project-generated GHG emissions and contribution to global climate change. For purposes of analyzing the proposed project's contribution to climate change and in accordance with recently adopted Amendments to the CEQA Guidelines, an impact climate change would be significant if the proposed project would:

- generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; or
- conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.

4-3.3 IMPACTS AND MITIGATION MEASURES OF THE PROPOSED PROJECT

For purposes of assessing impacts on air quality, the following analysis assumes that the Proposed Project could result in short-term and long-term impacts on air quality. Methods for determining short-term and long-term impacts are discussed below.

For short-term impacts, estimated increases in emissions associated with the Proposed Project were calculated based on construction-related information provided by the project applicant (i.e., offroad equipment usage, number of haul trucks, and construction schedules), as well as, emission factors obtained from the EPA and OFFROAD2007 (version 9.2.4) computer program. Modeling includes emissions associated with tree removal, initial grading and topsoil removal, subsoil excavation, berm construction, final grading, stabilization, offsite material hauling, and construction worker commute trips. The YSAQMD recommends evaluation of PM_{10} emissions based on a daily basis, and emissions of ozone-precursor pollutants on an annual basis. In accordance with YSAQMD recommendations and for comparison to YSAQMD-recommended significance thresholds, construction-generated emissions were calculated for ROG, NO_X, and PM_{10}. Emissions of $PM_{2.5}$ are a subset of PM_{10}, but are included in the emissions calculation for information purposes. Emissions were calculated for both daily and annual conditions.

For long-term impacts, regional area- and mobile-source emissions were estimated using emission factors derived from the EMFAC2007 computer program and trip-generation rates provided by the project applicant. Emissions associated with the use of off-road equipment (i.e., tractors, mowers, backhoes, excavator) for routine maintenance activities, as well as, agricultural activities, were calculated using emission factors derived from the OFFROOAD2007 computer program, approved for use by the YSAQMD (Jones pers. comm., September 14, 2009). The YSAQMD recommends evaluation of PM emissions based on a daily basis, and emissions of ozone-precursor pollutants on an annual basis. In accordance with YSAQMD recommendations and for comparison to YSAQMD-recommended significance thresholds, construction-generated emissions were calculated for ROG, NO_X, and PM_{10}. Emissions of $PM_{2.5}$ are a subset of PM_{10}, but are included in the emissions calculation for information purposes. Emissions were calculated for daily and annual operational conditions. Modeling assumptions and output results are provided in Appendix E.

Localized concentrations of mobile-source CO concentrations were qualitatively assessed based on estimated increases in vehicle trips associated with routine maintenance and end use activities. Exposure to localized concentrations of odors and TACs were qualitatively assessed based on the Proposed Project's potential to result in increased exposure of sensitive receptors to new or existing emission sources.

Estimated GHGs attributable to the proposed project were estimated using emission factors derived from the EMFAC2007 computer program and trip-generation rates provided by the project applicant. Emissions associated with the use of off-road equipment (i.e., tractors, mowers, backhoes, excavator) for routine maintenance activities, as well as, end-use agricultural activities, were calculated using emission factors derived from the EMFAC2007 and the OFFROOAD2007 computer programs. Emissions were converted to CO_2e units of measure, expressed in annual MTs.

4-3.3.1 Potential to Conflict with or Obstruct Implementation of the Applicable Air Quality Plan and Potential to Violate any Air Quality Standard or Contribute Substantially to an Existing or Projected Air Quality Violation

IMPACT 3-1: SHORT-TERM CONSTRUCTION INCREASES OF CRITERIA AIR POLLUTANTS

Construction generated emissions are "short-term", temporary in duration. PM emissions are typically greatest during grading and excavation activities, as well as, vehicle travel on unpaved roadways and surfaces. As with construction-generated emission of PM, construction generated emissions of ozone-precursor pollutants are also "short-term" and temporary in duration. Construction-generated emissions of ozone-precursor pollutants would be generated primarily by the use of off-highway equipment and haul trucks traveling to and from the project sites. Short-term construction related impacts associated with the proposed Alamo Creek and Ulatis Creek detention basins are discussed separately, as follows:

ALAMO PROJECT

Predicted daily construction-generated emissions associated with the proposed Alamo Detention Basin are summarized in Table 4-3.8. As noted in Table 4-3.8, a majority of daily construction-generated emissions would be generated during the grading and excavation phases, with the highest daily emissions of PM_{10} estimated at approximately 412 pounds (lbs)/day. Emissions of PM_{10} generated during the initial grading and topsoil removal, subsoil excavation, and final grading phases would exceed the YSAQMD's daily significance threshold of 80 lbs/day. Emissions of PM_{10} generated during these phases are predominantly associated with onsite grading and excavation and haul truck travel on unpaved surfaces, including travel along Roger's Lane. The remaining construction phases, including tree removal, berm construction, and stabilization are not anticipated to require extensive ground disturbance or haul truck travel on unpaved surfaces and would not exceed YSAQMD's PM_{10} significance threshold.

Construction of the Alamo Detention Basin would occur over a period of approximately 450 construction days, with the more intensive activities (i.e., grading, excavation, and material transport) occurring during the initial year of construction. Annual construction-generated emissions (by source) are summarized in Table 4-3.9. Based on the modeling conducted, a majority of the emissions of ozone-precursor pollutants (i.e., ROG and NO_X) would be associated with the use of onsite offroad equipment and haul trucks traveling to and from the construction site. Emissions associated with the use of on-road haul trucks for the removal of excavated material would also contribute to increased emissions of ozone-precursor pollutants. During the initial year of construction, emissions of ROG and NO_X would total approximately 1.67 and 16.49 tons/year, respectively. Emissions of ROG and NO_X generated during the subsequent year of construction would decrease to approximately 0.06 and 3.17 tons/year, respectively. Estimated annual emissions associated with construction of the proposed Alamo Detention Basin during the initial construction year could exceed the YSAQMD's significance thresholds of 10 tons/year of NO_x.

Daily emissions of construction-generated PM_{10} generated during the initial grading and topsoil removal, subsoil excavation, and final grading phases; as well as, NO_X emissions generated by mobile sources, would exceed the YSAQMD's significance thresholds. As a result, this impact would be considered ***significant***.

Table 4-3.8 Construction-Generated Daily Emissions - Alamo Site

Construction Phase [1]	Estimated Emissions (lbs/day) [2]			
	ROG	NO_X	PM_{10}	$PM_{2.5}$
Tree Removal	13.8	98.9	19.7	6.6
Initial Grading & Topsoil Removal	22.8	187.7	**401.5**	76.14
Subsoil Excavation	29.7	220.4	**411.5**	95.6
Berm Construction	8.0	62.6	59.2	13.4
Final Grading	5.6	50.6	**139.3**	29.8
Stabilization	0.9	4.3	7.7	1.1
YSAQMD Significance Thresholds:	--	--	80	--

[1] Construction phases are in order of occurrence.
[2] Totals may not sum due to rounding. **Bold** font indicates daily emissions in excess of YSAQMD's significance threshold. Emissions were calculated based on construction-related information provided by the project applicant (i.e., offroad equipment usage, number of haul trucks, and construction schedules), as well as, emission factors obtained from the EPA and OFFROAD2007 (version 9.2.4) computer program. Includes emissions associated with the use of off-road equipment, employee vehicle, delivery, and haul truck trips, fugitive emissions associated with material handling and ground-disturbance activities, and vehicle travel on unpaved surfaces, including Roger's Lane. Modeling assumptions and results are included in Appendix E of this report.

Table 4-3.9 Construction-Generated Annual Emissions - Alamo Site

Construction Year/Source	Estimated Emissions (tons/year)[1]			
	ROG	NO_X	PM_{10}	$PM_{2.5}$
Construction Year 1				
Off-Road Equipment Exhaust	0.77	5.14	0.32	0.29
Fugitive Dust-Onsite Disturbance	0.00	0.00	13.95	2.93
Fugitive Dust-Travel on Unpaved Surfaces	0.00	0.00	0.17	0.04
Worker Commute/On-Road Light-Duty Vehicles	0.00	0.00	0.00	0.00
Heavy-Duty Diesel Haul Trucks	0.90	**11.35**	0.54	0.48
Total:	1.67	**16.49**	14.97	3.73
YSAQMD Significance Thresholds:	10	10	--	--
Construction Year 2				
Off-Road Equipment Exhaust	.06	3.59	0.15	0.13
Fugitive Dust-Onsite Disturbance	0.00	0.00	3.00	0.63
Fugitive Dust-Travel on Unpaved Surfaces	0.00	0.00	0.02	0.00
Worker Commute/On-Road Light-Duty Vehicles	0.00	0.00	0.00	0.00
Total:	0.06	3.59	3.17	0.76
YSAQMD Significance Thresholds:	10	10	--	--

[1] Totals may not sum due to rounding. **Bold** font indicates daily emissions in excess of YSAQMD's significance threshold. Emissions were calculated based on construction-related information provided by the project applicant (i.e., offroad equipment usage, number of haul trucks, and construction schedules), as well as, emission factors obtained from the EPA and OFFROAD2007 (version 9.2.4) computer program. Includes emissions associated with the use of off-road equipment, employee vehicle, delivery, and haul truck trips, fugitive emissions associated with material handling and ground-disturbance activities, and vehicle travel on unpaved surfaces, including Roger's Lane. Modeling assumptions and results are included in Appendix E of this report.

ULATIS PROJECT

Predicted daily construction-generated emissions associated with the proposed Ulatis Creek Detention Basin are summarized in Table 4-3.10. As noted in Table 4-3.10, a majority of daily construction-generated emissions would be generated during the grading and excavation phases. Emissions of PM_{10} generated during the initial grading and topsoil removal, subsoil excavation, and final grading phases would exceed the YSAQMD's daily significance threshold of 80 lbs/day. Emissions of PM_{10} generated during these phases are predominantly associated with onsite grading and excavation and haul truck travel on unpaved surfaces. The remaining construction phases, including tree removal, berm construction, and stabilization are not anticipated to require extensive ground disturbance or haul truck travel on unpaved surfaces and would not exceed YSAQMD's PM_{10} significance threshold.

Construction of the Ulatis Creek Detention Basin would occur over a period of approximately 340 construction days, with the more intensive activities (i.e., grading, excavation, and material transport) occurring during the initial year of construction. Annual construction-generated emissions (by source) are summarized in Table 4-3.11. Based on the modeling conducted, a majority of the emissions of ozone-precursor pollutants (i.e., ROG and NO_X) would be associated with the use of onsite offroad equipment and haul trucks traveling to and from the construction site. Emissions associated with the use of on-road haul trucks for the removal of excavated material would also contribute to increased emissions of ozone-precursor pollutants. During the initial year of construction, emissions of ROG and NO_X would total approximately 2.40 and 25.83 tons/year, respectively. Emissions of ROG and NO_X generated during the subsequent year of construction would decrease to approximately 0.7 and 3.62 tons/year, respectively. Estimated annual emissions associated with construction of the proposed Ulatis Creek Detention Basin during the initial construction year could exceed the YSAQMD's significance thresholds of 10 tons/year of NO_X.

Daily emissions of construction-generated PM_{10} generated during the initial grading and topsoil removal, subsoil excavation, and final grading phases; as well as, NO_X emissions generated by mobile sources, would exceed the YSAQMD's significance thresholds. As a result, this impact would be considered ***significant***.

Table 4-3.10 Construction-Generated Daily Emissions – Ulatis Creek Site

Construction Phase[2]	Estimated Emissions (lbs/day)[1]			
	ROG	NO_X	PM_{10}	$PM_{2.5}$
Tree Removal	13.8	98.9	9.3	5.6
Initial Grading & Topsoil Removal	32.4	309.7	**277.3**	61.1
Subsoil Excavation	39.3	342.4	**285.2**	73.0
Berm Construction	8.0	62.6	23.1	7.0
Final Grading	5.6	50.6	**98.1**	22.1
Stabilization	0.9	4.3	2.2	0.5
YSAQMD Significance Thresholds:	--	--	80	--

[1] Totals may not sum due to rounding. **Bold** font indicates daily emissions in excess of YSAQMD's significance threshold. Emissions were calculated based on construction-related information provided by the project applicant (i.e., offroad equipment usage, number of haul trucks, and construction schedules), as well as, emission factors obtained from the EPA and OFFROAD2007 (version 9.2.4) computer program. Includes emissions associated with the use of off-road equipment, employee vehicle, delivery, and haul truck trips, fugitive emissions associated with material handling and ground-disturbance activities, and vehicle travel on unpaved surfaces. Modeling assumptions and results are included in Appendix E of this report.

[2] Construction phases are in order of occurrence.

Table 4-3.11 Construction-Generated Annual Emissions – Ulatis Creek Site

Construction Year/Source	Estimated Emissions (tons/year)[1]			
	ROG	NO_X	PM_{10}	$PM_{2.5}$
Construction Year 1				
Off-Road Equipment Exhaust	0.77	5.14	0.32	0.29
Fugitive Dust-Onsite Disturbance	0.00	0.00	10.36	2.18
Fugitive Dust-Travel on Unpaved Surfaces	0.00	0.00	0.07	0.02
Worker Commute/On-Road Light-Duty Vehicles	0.00	0.00	0.00	0.00
Heavy-Duty Diesel Haul Trucks	1.63	**20.69**	0.98	0.87
Total:	2.40	**25.83**	11.73	3.35
YSAQMD Significance Thresholds:	10	10	--	--
Construction Year 2				
Off-Road Equipment Exhaust	0.06	3.59	0.15	0.13
Fugitive Dust-Onsite Disturbance	0	0	1.82	0.38
Fugitive Dust-Travel on Unpaved Surfaces	0	0	0.01	0
Worker Commute/On-Road Light-Duty Vehicles	0.01	0.02	0.05	0.01
Total:	0.07	3.62	2.03	0.52
YSAQMD Significance Thresholds:	10	10	--	--

[1] Totals may not sum due to rounding. **Bold** font indicates daily emissions in excess of YSAQMD's significance threshold. Emissions were calculated based on construction-related information provided by the project applicant (i.e., offroad equipment usage, number of haul trucks, and construction schedules), as well as, emission factors obtained from the EPA and OFFROAD2007 (version 9.2.4) computer program. Includes emissions associated with the use of off-road equipment, employee vehicle, delivery, and haul truck trips, fugitive emissions associated with material handling and ground-disturbance activities, and vehicle travel on unpaved surfaces. Modeling assumptions and results are included in Appendix E of this report.

IMPACT SUMMARY

Daily emissions of construction-generated PM_{10} generated during the initial grading and topsoil removal, subsoil excavation, and final grading phases; as well as, NO_X emissions generated by mobile sources, would exceed the YSAQMD's significance thresholds. Assuming that excavation activities associated with the construction of both basins were to occur simultaneously, maximum daily emissions of PM_{10} would total approximately 697 lbs/day and annual emissions could reach levels of approximately 42 tons/year of NO_X. Assuming that both basins were to be constructed simultaneously, ROG emissions would not exceed YSAQMD significance thresholds. However, because construction-generated emissions of PM_{10} and NO_X would exceed the YSAQMD's significance thresholds, this impact would be considered ***significant.***

With mitigation and based on the modeling conducted for this project, maximum daily emissions of PM_{10} would be approximately 165 lbs/day at the proposed Alamo Project and approximately 119 lbs/day at the proposed Ulatis Project. With implementation of Mitigation Measure 3-1, predicted maximum overall daily emissions of PM_{10} associated with the future development of the proposed detention basins would be reduced by approximately 60 percent at the proposed Alamo site and by approximately 58 percent at the proposed Ulatis site. Construction-generated emissions of PM_{10} would be substantially reduced at both of the Proposed Project sites. However, construction-generated emissions would still exceed YSAQMD significance threshold of 80 lbs/day, particularly if construction of both basins were to occur simultaneously.

Implementation of Mitigation Measure 3-1 would reduce NO_X emissions from onsite offroad equipment by approximately 20 percent. With mitigation, maximum annual emissions of NO_X would be reduced to approximately 15.5 tons/year at the proposed Alamo site and approximately 24.8 tons/year at the proposed Ulatis site. However, emissions of NO_X associated with the development of the Alamo and Ulatis site would still be estimated to exceed the YSAQMD significance threshold.

Construction of the proposed stormwater detention basins would exceed YSQMD significance thresholds, construction-generated emissions of PM_{10} and NO_X would exceed the YSAQMD's significance thresholds, particularly if construction of the proposed basins were to occur simultaneously. No additional mitigation measures have been identified that would reduce this impact to a less-than-significant level. As a result, this impact is considered ***significant and unavoidable***.

MITIGATION MEASURE 3-1: MINIMIZE SHORT-TERM INCREASES OF CRITERIA AIR POLLUTANTS

The following measures shall be implemented for the control of fugitive dust emissions associated with the construction of the Proposed Project:

1. Water all active construction areas at least three times daily. Frequency of application should be based on the type of operation, soil and wind exposure.

2. Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least 2 feet of freeboard.

3. Hydroseed exposed areas after cut and fill operations.

4. Replant vegetation in disturbed areas as quickly as possible.

5. Enclose, cover, or water three times daily exposed stockpiles, such as dirt, sand, etc.

6. Sweep streets daily, with water sweepers, if visible soil materials are carried onto adjacent public streets.

7. Install sandbags or other erosion control measures to prevent silt runoff to public roadways.

The following measures shall be implemented for the control of mobile-source emissions associated with the construction of the proposed Alamo Creek and Ulatis Creek detention basins:

8. Construction equipment shall not be left idling for periods longer than 5 minutes when not in use.

9. The project contractor shall provide a plan for approval by the City, in consultation with YSAQMD, demonstrating that the heavy-duty (>50 horsepower), off-road vehicles to be used in the construction project, including owned, leased, and subcontractor vehicles, will achieve a project-wide fleet-average 20-percent NO_X reduction and 45-percent particulate reduction compared to the most recent CARB's fleet-average at the time of construction. Acceptable options for reducing emissions include the use of late-model engines, low-emission diesel products, alternative fuels, PM traps, engine retrofit technology, after-treatment products, and/or such other options as become available.

IMPACT 3-2: LONG-TERM OPERATIONAL INCREASES OF CRITERIA AIR POLLUTANTS

Regional criteria air pollutants of primary concern within the YSAQMD include emissions of ozone-precursor pollutants (i.e., ROG and NO_X), as well as emissions of airborne PM (YSAQMD 2007). The long-term operation of the proposed Alamo Project and the Ulatis Project would have similar maintenance requirements. The long-term maintenance and/or agricultural activities would be anticipated to require periodic use of tractors, mowers, and pickup trucks. The specific equipment used would vary depending on the end-use ultimately selected. However, it is anticipated that maintenance and/or agricultural uses would require the use of approximately 2 tractors twice annually, one backhoe or excavator once every two years, one tractor approximately 4 days per month (during months of any agricultural production), and one mower approximately 2 days per week (for approximately one month in the late spring). Incidental public access activities may also occur, which would be anticipated to result in an average of approximately 15 vehicle trips per month. More frequent use may occur during the warmer spring and summer months with less vehicle trips occurring during the colder winter months.

Estimated annual operational emissions of ROG and NO_X, as well as, daily emissions of PM associated with the proposed stormwater detention basins are summarized in Table 4-3.12. As depicted, operation of the proposed stormwater detention basins would generate less than 1 ton/year of ROG and NO_X. Assuming that all maintenance and end-use activities and vehicle trips were to occur on the same day, daily emissions of PM_{10} would total approximately 15 lbs/day. Estimated operational emissions would not exceed YSAQMD significance thresholds of 10 tons/year for ROG or NO_X, or 80 lbs/day for PM_{10}. In addition, it is important to note that the project site would typically be used for regular agricultural production if it were not owned by the City. As noted earlier in this report, emissions associated with agricultural use vary depending on the specific activities being conducted (refer to Tables 4-3.5 and 4-3.6). In comparison to regular agricultural operations, the proposed project would result in a net reduction in emissions of ozone-precursor pollutant (i.e., ROG and NO_x). As previously discussed, emissions of PM associated with agricultural uses are typically highest during harvest season and for end-of-season site preparation activities involving soil disturbance (i.e., disking). In comparison to airborne particulate emissions generated during harvest season or end-of-season site preparation, annual emissions of airborne PM associated with the proposed project would be lower than existing agricultural activities. However, during other periods of the year, excluding harvest season or end-of-season site preparation, daily operational emissions of airborne PM associated with the proposed project would be slightly higher than existing agricultural operations. Combined net increases of daily PM10 emissions attributable to the proposed project would be approximately 31 lbs/day, which would not exceed YSAQMD significance thresholds. Because implementation of the proposed project would not result in increased emissions that would exceed YSAQMD significance thresholds, this impact would be considered ***less than significant***.

Table 4-3.12 Long-term Operational Emissions – Alamo and Ulatis Project

Source	Estimated Emissions			
	ROG (tons/year)	NO_X (tons/year)	PM_{10} (lbs/day)	$PM_{2.5}$ (lbs/day)
On-Road Motor Vehicles	<0.01	<0.01	15.03	15.02
Off-Road Mobile Equipment	<0.01	0.02	0.35	0.30
Total Emissions/Basin:	<0.01	0.02	15.38	15.33
Total (Alamo & Ulatis Basins):	<0.01	0.04	30.76	30.66
YSAQMD Thresholds:	10	10	80	--

Regional area- and mobile-source emissions were estimated using emission factors derived from the EMFAC2007 computer program and trip-generation rates provided by the project applicant. Emissions associated with the use of off-road equipment (i.e., tractors, mowers, backhoes, excavator) for routine maintenance activities, as well as, agricultural activities, were calculated using emission factors derived from the OFFROOAD2007 computer program. Estimated daily emissions assume that maintenance and end-use activities/vehicle trips would occur on the same day. Refer to Appendix E for modeling assumptions and output results.

4-3.3.2 Potential to Expose Sensitive Receptors to Substantial Pollutant Concentrations

IMPACT 3-3: INCREASED EXPOSURE OF SENSITIVE RECEPTORS TO LOCALIZED CONCENTRATIONS OF TOXIC AIR CONTAMINANTS

The exposure of sensitive receptors to emissions of TAC can occur during both the construction and operational phases of the project and would be primarily associated with emissions of DPM associated with the operation of offroad equipment. As noted earlier in this report, DPM was identified as a TAC by the CARB in 1998.

Health-related risks associated with diesel-exhaust emissions are primarily associated with long-term exposure and associated risk of contracting cancer. For residential land uses, the calculation of cancer risk associated with exposure of to TACs are typically calculated based on a 70-year period of exposure. The use of diesel-powered construction equipment, however, would be temporary and episodic and would occur over a relatively large area. Assuming an overall construction period of approximately 1.5 years, construction activities would constitute approximately two percent of the total exposure period typically applied for the calculation of risk. Diesel-powered equipment associated with the long-term operation of the proposed stormwater detention basins would also be intermittent and dispersed over a large area. Use of offroad equipment for maintenance and/or agricultural uses would be limited to approximately 15 days per year, which would constitute less than 0.001 percent of the total exposure period typically applied for the calculation of risk. For these reasons, DPM generated by project construction and operation, in and of itself, would not be expected to create conditions where the probability of contracting cancer is greater than 10 in 1 million for nearby receptors. In addition, the Proposed Project would not result in the installation of any equipment or processes that would be considered major sources of TACs. Short-term and long-term exposure of nearby sensitive land uses to TACs would be considered ***less than significant***.

4-3.3.3 Potential to Violate any Air Quality Standard or Contribute Substantially to an Existing or Projected Air Quality Violation or Potential to Expose Sensitive Receptors to Substantial Pollutant Concentrations

IMPACT 3-4: CONTRIBUTION TO LOCAL MOBILE-SOURCE CONCENTRATIONS OF CARBON MONOXIDE

Local mobile-source CO emissions near roadway intersections are a direct function of traffic volume, speed, and delay. Transport of CO is extremely limited because it disperses rapidly with distance from the source under normal meteorological conditions. Under specific meteorological conditions, CO concentrations near roadways and/or intersections may reach unhealthy levels. For this reason, modeling of CO concentrations is typically recommended where sensitive land uses are located near signalized roadway intersections that are projected to operate at unacceptable levels of service (i.e., LOS E or F).

Implementation of the proposed project would result in short-term and long-term increases in vehicle traffic. Short-term construction of the proposed basins would result in a temporary increase in haul truck traffic along area roadways associated with the removal of excavated material from the basin sites. Although the haul truck route has not yet been identified, a majority of the haul trucks would be anticipated to travel along Vaca Valley Road and Pleasants Valley Road. Long-term operation of the proposed basins, including maintenance and end-use activities, would be anticipated to generate a combined total of approximately 36 vehicle trips per month, for an average of approximately 2 trips per day.

There are no signalized roadway intersections located in the immediate vicinity of the proposed basin sites or along the anticipated haul truck route that would be adversely affected by the project. In addition, the hours of hauling during the construction period would be dispersed throughout the day, with a majority of the haul truck trips occurring during the non-peak commute hours. Long-term operations would not be anticipated to result in a significant increase in vehicle traffic along area roadways. For these reasons and given the relatively low background CO concentrations in the project area (refer to Table 4-3.3), the proposed project would not result in a significant contribution to ambient CO concentrations that would be anticipated to exceed ambient air quality standards at nearby sensitive land uses. This impact would be considered ***less than significant***.

4-3.3.4 Potential to Create Objectionable Odors Affecting a Substantial Number of People

IMPACT 3-5: INCREASED EXPOSURE OF SENSITIVE RECEPTORS TO ODORS

Construction of the proposed project would involve the use of a variety of gasoline or diesel-powered equipment that would emit exhaust fumes. Exhaust fumes, particularly diesel-exhaust, may be considered objectionable by some people. However, construction-generated emissions would occur intermittently

throughout the workday and would dissipate rapidly within increasing distance from the source. As a result, short-term construction activities would not expose a substantial number of people to frequent odorous emissions. The proposed project would not result in the installation of any equipment or processes that would be considered major odor emission sources. This impact would be considered ***less than significant***.

4-3.4 CUMULATIVE IMPACTS AND MITIGATION MEASURES

The cumulative setting for air quality includes existing, approved, proposed, and reasonably foreseeable development in the SVAB, including the proposed and approved projects, as well as consideration of existing and future activities in the SVAB.

IMPACT 3-6: CUMULATIVE CONTRIBUTION TO LOCAL AIR QUALITY

The primary criteria air pollutant of local concern is CO. The project's contribution to localized CO concentrations was analyzed in Impact 4. As discussed, implementation of the proposed project would not be anticipated to contribute to localized concentrations of CO that would exceed applicable air quality standards. Implementation of the proposed project would not result in a cumulative contribution to existing TAC or odor concentrations in the project area. As a result, the proposed project's contribution to cumulative local air quality conditions would not be considerable and would be considered ***less than significant***.

IMPACT 3-7: CUMULATIVE CONTRIBUTION TO REGIONAL AIR QUALITY

Due to the region's non-attainment status for ozone and PM_{10}, if project-generated emissions of either of the ozone-precursor pollutants (i.e., ROG and NO_X) or PM_{10} would exceed the long-term thresholds, then the project's cumulative impacts would be considered significant. As discussed in Impact 3-1, predicted short-term construction emissions would exceed YSAQMD significance thresholds. As a result, the project's cumulative contribution to regional air quality conditions would be cumulatively considerable and significant.

As noted in Impact 3-1, implementation of Mitigation Measure 3-1 could reduce the severity of short-term increases of emissions attributable to the Proposed Project. However, short-term increases in emissions would still be anticipated to exceed YSAQMD significance thresholds. As a result, this impact would be considered ***significant and unavoidable***.

IMPACT 3-8: CUMULATIVE CONTRIBUTION TO CLIMATE CHANGE AND CONSISTENCY WITH APPLICABLE PLAN, POLICY, OR REGULATION ADOPTED FOR THE PURPOSE OF REDUCING GHG EMISSIONS

Implementation of the Proposed Project would contribute to increases of GHG emissions that are associated with global climate change. Estimated GHG emissions attributable to future development would be primarily associated with increases of CO_2 from mobile sources. Estimated GHG emissions were calculated using emission factors obtained from the OFFROAD2007 and EMFAC2007 computer programs, based on construction and operational offroad equipment usage and estimated vehicle trips provided by the project applicant. Emissions were converted to CO_2e, expressed in MTs. Short-term and long-term GHG emissions attributable to the proposed project and are summarized in Table 4-3.13 and Table 4-3.14, respectively.

SHORT-TERM CONSTRUCTION

Based on the modeling conducted, annual emissions of GHGs associated with the construction of the Proposed Project would range from approximately 467 to 2,478 MT CO_2e. Assuming that both basins were to be constructed simultaneously, a total of up to approximately 3,587 MT CO_2e could be emitted during the initial year of construction and approximately 938 MT CO_2e during the subsequent construction year.

As noted earlier in this section (refer to Tables 4.3-5 and 4.3-6), agricultural operations at the Alamo site and Ulatis site have generated an estimated annual emission of approximately 75 MT CO_2e and 65 MT CO_2e, respectively. Combined emissions from both the Alamo and Ulatis sites total approximately 140 MT CO_2e annually. In comparison to emissions generated by the agricultural use of the site, construction activities would result in net increases of approximately 4,285 MT CO_2e during the first year of construction and approximately 798 MT CO_2e during the second year of construction. Actual emissions may vary, depending on the final construction schedules and activities conducted.

Table 4-3.13 Short-term Construction Greenhouse Gas Emissions

Construction Year	CO_2e (MT/Year)[1]
Alamo Creek Detention Basin	
Construction Year 1	2,478
Construction Year 2	467
Ulatis Creek Detention Basin	
Construction Year 1	1,947
Construction Year 2	471
Combined Emissions (Alamo Creek & Ulatis Creek Detention Basins)	
Construction Year 1	4,425
Construction Year 2	938
Existing Agricultural-Use Emissions[2]:	140

[1] Emissions were calculated based on emission factors derived from the OFFROAD2007 and EMFAC2007 computer programs. Includes maintenance and end-use equipment usage and vehicle trips based on operational data provided by the project applicant. Emissions were converted to CO2 equivalents (i.e., CO2e), expressed in annual metric tons.

[2] Includes combined emissions associated with agricultural production at the Alamo and Ulatis sites.
Refer to Appendix E for modeling assumptions and results.

LONG-TERM OPERATION

The long-term maintenance and/or agricultural activities associated with the Proposed Project would be anticipated to require periodic use of tractors, mowers, and pickup trucks. The specific equipment used would vary depending on the end-use ultimately selected. However, it is anticipated that maintenance and/or agricultural uses would require the use of approximately 2 tractors twice annually, one backhoe or excavator once every two years, one tractor approximately 4 days per month (during months of any agricultural production), and one mower approximately 2 days per week (for approximately one month in the late spring). Incidental public access activities may also occur, which would be anticipated to result in an average of approximately 15 vehicle trips per month. GHG emissions associated with the use of onsite offroad equipment would total approximately 2.5 MT CO_2e annually. Emissions associated with vehicles traveling to and from the basins would total approximately 2 MT CO_2e annually. Assuming that both basins would be operated in a similar manner, combined GHG emissions would total approximately 9 MT CO_2e annually.

As discussed above, combined emissions from pre-project agricultural operations at the project sites total approximately 140 MT CO_2e annually. In comparison to emissions generated by agricultural uses on the sites, operational activities associated with the proposed basins would result in net decreases of approximately 131 MT CO_2e annually. Although the proposed project would result in a net decrease in annual GHG emissions, it is important to note that this assumption assumes that displaced agricultural uses would not be relocated to other areas currently not under agricultural production. However, it is also important to note that the proposed project is intended to address existing local flooding issues, which could be exacerbated by climate change.

Table 4-3.14 Long-term Operational Greenhouse Gas Emissions

Source	CO_2e (MT/Year)[1]
Alamo Creek Detention Basin	4.4
Ulatis Creek Detention Basin	4.4
Combined Emissions	8.8
Pre-Project Agricultural-Use Emissions[2]:	139.8
Net Change[3]:	-131

[1] Emissions were calculated based on emission factors derived from the OFFROAD2007 and EMFAC2007 computer programs. Includes maintenance and end-use equipment usage and vehicle trips based on operational data provided by the project applicant. Emissions were converted to CO2e s (i.e., CO2e), expressed in annual metric tons.
[2] Includes combined emissions associated with agricultural production at the Alamo and Ulatis sites.
[3] Assumes existing agricultural activities would be replaced and would not relocate.
Refer to Appendix E for modeling assumptions and results.

CONSISTENCY WITH APPLICABLE PLAN, POLICY, OR REGULATION

Based on the modeling conducted, short-term construction activities would result in combined emissions of approximately 4,525 MT CO2e over an approximate 1.5-year period. Long-term operational emissions would total approximately 9 MT CO2e annually. While increased GHG emissions would contribute to overall increases in GHG emissions and potential global climate change, it is important to note that a majority of the project-generated GHG emissions would be limited to the initial construction period of approximately 1.5 years. The Project as proposed does not include BAAQMD-recommended measures to reduce construction-generated GHG emissions and may therefore conflict with plans, policies, or

regulations adopted for the purpose of reducing GHG emissions. This impact would therefore, be considered ***potentially significant***.

Implementation of Mitigation Measure 3-8 would reduce short-term increases in GHG emissions during construction and reduce potential conflicts with plans, policies, or regulations for GHG emissions to a ***less-than-significant level***.

MITIGATION MEASURE 3-8: MINIMIZE SHORT-TERM INCREASES OF GREENHOUSE GAS EMISSIONS

The following measures shall be implemented to reduce short-term increases of GHG emissions:

1. Implement Mitigation Measure 3-1, (8) and (9) ~~and (10)~~.
2. Construction waste shall be reused and/or recycled, to the maximum extent practical.
3. Construction of onsite facilities shall reduce building material waste and incorporate the use of local building materials, to the maximum extent practical.
4. Construction workers shall be encouraged to car/vanpool or utilize alternative means of transportation to commute to and from the construction site.

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