

**AIR QUALITY  
IMPACT ASSESSMENT**

**FOR**

**HIGHLAND PARK SUBDIVISION PROJECT  
CITY OF REDDING, CA**

**PREPARED FOR:**

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# AIR QUALITY IMPACT ASSESSMENT

## ENVIRONMENTAL SETTING

### NORTHERN SACRAMENTO VALLEY AIR BASIN

The proposed project is located within the City of Redding, which is located in Shasta County at the northern end of the Northern Sacramento Valley Air Basin (NSVAB). The NSVAB consists of a total of seven counties, including Sutter, Yuba, Colusa, Butte, Glenn, Tehama, and Shasta counties. The NSVAB is bounded on the north and west by the Coastal Mountain Range and on the east by the southern portion of the Cascade Mountain Range and the northern portion of the Sierra Nevada Mountains. These mountain ranges reach heights in excess of 6,000 feet with peaks rising much higher. This provides a substantial physical barrier to locally created pollution as well as that transported northward on prevailing winds from the Sacramento Metropolitan area (NSVAB 2004).

The valley is often subjected to inversion layers that, coupled with geographic barriers and high summer temperatures, create a high potential for air pollution problems. Generally, Shasta County experiences moderate to very poor capability to disperse pollutants nearly 80 percent of the time. This is, in large measure, due to relatively stable atmospheric conditions which acts to suppress vertical air movement. Extremely stable atmospheric conditions referred to as "inversions" act as barriers to pollutants. In valley locations under 1,000 feet elevation, such as the Redding Metropolitan area, they create a "lid" under which pollutants are trapped. Dust and other pollutants can be trapped within these inversion layers and will not disperse until atmospheric conditions become unstable. This situation creates concentrations of pollutants at or near the ground surface and as a result poses significant health risks for plants, animals, and people (NSVAB 2004).

### REGIONAL CLIMATE AND ATMOSPHERIC CONDITIONS

The climate of the Northern Sacramento Valley Air Basin, as with all of Central California, is dominated by the strength and location of a semi-permanent, subtropical high-pressure cell over the northeastern Pacific Ocean. Climate is also affected by the temperature moderating effects of the nearby oceanic heat reservoir. Warm summers, cool winters, rainfall, daytime onshore breezes, and moderate humidity characterize regional climatic conditions. In summer when the high-pressure cell is strongest, temperatures are very warm and humidity is low. The daily incursion of the sea breeze into the Central Valley, however, creates persistent breezes that moderate the summer heat. In winter, when the high-pressure cell is weakest, conditions are characterized by occasional rainstorms interspersed with stagnant conditions and sometimes heavy fog. Airflow patterns in the basin can be characterized by one of eight directional types, the most frequent being northwesterly. Northwest winds are predominant in spring and summer, but seasonal variations do occur. Calm conditions dominate the winter months.

Terrain features create various microclimates. The pattern of mountains and hills within the basin is primarily responsible for the wide variations of rainfall, temperatures, and localized winds that occur throughout the region. Temperature variations have an important influence on basin wind flow, dispersion along mountain ridges, vertical mixing and photochemistry. Because the temperature moderating marine influence decreases with distance, monthly and annual temperature variations are greater inland than along the coast.

Precipitation is highly variable seasonally. Summer months are often dry, averaging less than one inch in total precipitation per month. Rainfall is most abundant during the winter months and

increases with elevation. Annual rainfall is lowest in the inland valleys, higher in the coastal and inland foothills, and highest in the mountains.

## LOCAL CLIMATE

Temperature and precipitation data were taken from the Redding monitoring station. The project area generally experiences moderate temperatures and humidity levels. Temperatures range from an average January low of 36.8 degrees Fahrenheit (°F) to an average July high of 98.6 °F. Rainfall in the project area averages 28.5 inches annually and occurs predominantly from November to May (WRCC 2006). Winds in the study area average approximately 7.1 mph annually with predominant wind flow from the north-northwest (NWS 2006).

## METEOROLOGICAL INFLUENCES ON AIR QUALITY

Regional airflow patterns have an effect on air quality patterns by directing pollutants downwind of sources. Localized meteorological conditions, such as light winds and shallow vertical mixing, as well as topographical features, such as surrounding mountain ranges, create areas of high pollutant concentrations by hindering dispersal. An inversion layer is produced when a layer of warm air traps cooler air close to the ground. Such temperature inversions hamper dispersion by stratifying contaminated air near the ground.

The conditions that form high ambient air concentrations of ozone (O<sub>3</sub>) are sunshine, early-morning stagnation in source areas, high surface temperatures, strong and low morning inversions, greatly restricted vertical mixing during the day, and daytime subsidence that strengthens the inversion layer. In the winter, temperature inversions dominate during the night and early morning hours but frequently dissipate by afternoon. At this time, the greatest air pollution sources are derived from carbon monoxide (CO) and oxides of nitrogen (NO<sub>x</sub>). High CO concentrations occur on winter days with strong surface inversions and light winds. Carbon monoxide transport is extremely limited. High NO<sub>2</sub> levels usually occur during the autumn or winter on days with summer-like weather conditions. These conditions include low inversions, limited daytime mixing, and stagnant windflow conditions.

## COMMON AIR POLLUTANTS

Common air pollutants of regional concern within the basin are discussed separately below and summarized in Table 1.

### **Ozone**

Ozone is a colorless, odorless gas that is present in the troposphere in concentrations of a few tenths of a part per million (ppm) or less. Ozone is not usually emitted directly by pollutant-generating sources, rather it is created by atmospheric reactions between organic compounds (such as solvents and unburned fuels) and NO<sub>x</sub> (a product of combustion processes). Because ozone is created over time as these gases mix in the presence of sunlight, and because these gases are emitted by hundreds of sources in a geographical area, ozone concentrations tend to be higher downwind of the primary sources. Peak ozone concentrations also typically occur during the summer months, when longer days allow the chemical reactions to continue over a longer period of time.

Adverse health effects resulting from ozone exposure range from mild irritation of the eyes, nose, and throat to possible impairment of lung functions. Other effects include aggravation of respiratory and cardiac diseases, and pulmonary dysfunction. Ozone, the primary constituent of photochemical smog, is a severe irritant to all mucous membranes and primarily affects the respiratory system.

## **Fine Particulate Matter**

Atmospheric particulates are made up of fine solids or liquids such as soot, dust, aerosols, fumes and mists. A large portion of the total suspended particulate matter (TSP) in the atmosphere is fine particulate matter less than or equal to 10 micrometers in diameter (PM<sub>10</sub>). Particulate matter 2.5 micrometers or less is referred to as PM<sub>2.5</sub>. The California Air Resources Board (ARB) estimates that PM<sub>10</sub> comprises approximately 64 percent of TSP matter. These small particulates cause the greatest health risk because they can penetrate the defenses of the human respiratory system more easily than other TSP matter.

Sources of particulate matter include directly emitted particulates (e.g., fugitive dust and smoke), finely divided aerosols (chiefly organic compounds), and byproducts of secondary reactions of emitted sulfates and nitrates in the atmosphere.

The health effects of particulate matter (PM) depend on the nature of the particulate matter. For example, health effects may be associated with metals, polycyclic aromatic hydrocarbons, and other toxic substances adsorbed onto fine particulates, fine dust particles of silica, or asbestos. This is often referred to as the piggybacking effect. Generally, health effects associated with particulate matter may result from both short-term and long-term exposures to elevated levels of particulate matter. These effects may include reduced lung function, aggravation of asthma and bronchitis symptoms, respiratory disease and increased mortality.

## **Carbon Monoxide**

Carbon monoxide (CO) is a product of incomplete combustion, principally from automobiles and other mobile sources of pollution. Industrial sources typically contribute less than 10 percent to ambient CO levels. Peak CO levels are typically localized near areas of high motor vehicle traffic, particularly during winter months when calm conditions are common.

Carbon monoxide enters the bloodstream through the lungs by combining with hemoglobin, the substance that normally carries oxygen to the cells. It combines with hemoglobin much more readily than oxygen does, resulting in a drastic reduction in the amount of oxygen available to the cells. The symptoms of CO exposure at higher levels include dizziness, headaches, slowed reactions, and fatigue. Exposure is especially harmful to people with heart or lung disease, or anemia.

## **Nitrogen Dioxide**

Nitrogen dioxide (NO<sub>2</sub>) is a natural trace constituent of the troposphere. The major anthropogenic sources of NO<sub>2</sub> are combustion devices, such as boilers, gas turbines, and stationary and mobile reciprocating internal combustion engines. Combustion devices primarily emit nitric oxide (NO), which reacts in the atmosphere to form NO<sub>2</sub>. The combined emissions of NO and NO<sub>2</sub> are referred to as NO<sub>x</sub>, which are reported as equivalent NO<sub>2</sub>. Because NO<sub>2</sub> reacts with reactive organic gases (ROG) to form ozone and is also generated by the reactions that form photochemical smog, the concentrations of NO<sub>2</sub> in a particular geographical area may not be representative of the local NO<sub>x</sub> emission sources. NO<sub>2</sub> concentrations tend to be higher close to major source areas and lower in downwind areas because of the interrelationship between O<sub>3</sub> and NO<sub>2</sub> levels.

Inhalation is the most common route of exposure to NO<sub>2</sub>. Because NO<sub>2</sub> has relatively low solubility in water, its principal site of toxicity is the lower respiratory tract. The severity of the health effects depends mainly on the concentration inhaled and less on the duration of exposure. An individual

may experience a variety of acute symptoms, including coughing, difficulty breathing, vomiting, headache, and eye irritation during or shortly after exposure. Severe, symptomatic NO<sub>2</sub> intoxication after acute exposure has been linked on occasion with prolonged respiratory impairment with symptoms of chronic bronchitis, and with decreased lung function.

**Table 1  
Criteria Air Pollutants  
Summary of Common Sources and Effects**

Pollutant	Description	Sources	Health Effects	Welfare Effects
Carbon Monoxide	Colorless, odorless gas	Motor vehicle exhaust, indoor sources include kerosene heaters and wood-burning stoves.	Headaches, reduced mental alertness, heart attack, cardiovascular diseases, impaired fetal development and death.	Contributes to the formation of smog.
Sulfur Dioxide	Colorless gas that dissolves in water vapor to form an acid, and interacts with other gases and particulates in the air	Coal-fired power plants, petroleum refineries, manufacture of sulfuric acid and smelting of ores containing sulfur.	Eye irritation, wheezing, chest tightness, shortness of breath and lung damage.	Contributes to the formation of acid rain, impairs visibility, impairs plant photosynthesis, degrades water quality, and results in aesthetic damage to buildings.
Nitrogen Dioxide	Reddish brown, highly reactive gas	Motor vehicles, electric utilities, and other industrial, commercial, and residential sources that burn fuels.	Susceptibility to respiratory infections, irritation of the lung and respiratory symptoms (e.g., cough, chest pain, difficulty breathing).	Contributes to the formation of smog and acid rain, degrades water quality, contributes to global warming and impairs visibility.
Ozone	Gaseous pollutant when it is formed in the troposphere	Vehicle exhaust and certain other fumes. Formed from the combination of reactive organic gases and oxides of nitrogen in the presences of sunlight.	Eye and throat irritation, coughing, respiratory tract problems, asthma and lung damage.	Plant and ecosystem damage.
Lead	Metallic element	Metal refineries, lead 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 and a lowered IQ.	Affects plants, animals, and aquatic ecosystems.
Particulate Matter	Very small particles of dust, soot, or other matter, including tiny droplets of liquids	Diesel engines, power plants, industries, windblown dust and wood stoves.	Eye irritation, asthma, bronchitis, lung damage cancer, heavy metal poisoning and cardiovascular effects.	Impairs visibility, impairs plant photosynthesis, and results in atmospheric deposition and aesthetic damage to buildings.
Source: ARB 2005; EPA 2006				

## Sulfur Dioxide

Sulfur dioxide (SO<sub>2</sub>) is produced by the combustion of any fuel containing sulfur. The major health effects of SO<sub>2</sub> are on the upper respiratory tract. Only a small portion of inhaled SO<sub>2</sub> penetrates the lower respiratory tract because it is water soluble. Sulfur dioxide is a respiratory irritant. On contact with the moist mucous membranes, SO<sub>2</sub> produces sulfurous acid, which is a direct irritant. Concentration rather than duration of the exposure is the more important determinant of respiratory effects. High concentrations of SO<sub>2</sub> may cause edema of the lungs or glottis and can produce respiratory paralysis.

## TOXIC AIR CONTAMINANTS

Aside from the specific air pollutants described above, toxic air contaminants (TACs) are a broad regulatory category of airborne pollutants with the potential to impact the human environment. TACs include those air pollutants that are believed to result in an increase in mortality or serious illness, or that may pose a present or potential hazard to human health. Health effects commonly associated with TACs include cancer, birth defects, neurological damage, damage to the body's natural defense system, and diseases that lead to death. TACs can be separated into carcinogens and noncarcinogens based on the nature of the physiological degradation associated with exposure to the pollutant. For regulatory purposes, carcinogens are assumed to have no safe threshold below which health impacts will not occur. Noncarcinogenic TACs differ in that there is generally assumed to be a safe level of exposure below which no negative health impact is believed to occur. These levels are determined on a pollutant-by-pollutant basis.

TACs are regulated through implementation of federal and state laws. Federal law uses the term "hazardous air pollutants" (HAPs) to refer to the same types of compounds referred to as TACs under state law. Both terms encompass essentially the same compounds. For purposes of this report, "TACs" will be used when referring to these pollutants. It is important to note that TACs are not considered criteria pollutants in that the CAA and CCAA do not address them specifically through the setting of NAAQS or CAAQS. However, enforcement of the NAAQS or CAAQS for the control of criteria pollutants, such as ozone and particulate matter, can result in reducing airborne emissions of TACs.

## ODOROUS AIR EMISSIONS

The sensory perception of odors has four major dimensions: detectability, intensity, character and hedonic tone. The odor detectability threshold consists of the detection threshold and recognition threshold. The detection threshold is the lowest concentration of an odor that will elicit a sensory response; at this concentration there is an awareness of the presence of an added substance, but not necessarily an odor sensation. The recognition threshold is the minimum concentration that is recognized by a population as having a characteristic odor quality. Odor intensity refers to the perceived strength of the odor sensation. Odor character is how the substance smells (e.g., fishy, rancid) or what it smells like (e.g., hay, sewer, turpentine, ammonia). Hedonic tone is a category judgment of the relative pleasantness or unpleasantness of the odor, and is influenced by factors such as subjective experience and frequency of occurrence. Each of these elements plays a role in the identification of odor impacts.

There are no standards for the control of odors in federal, state, or local air quality regulations. Offensive odors rarely cause any physical harm; however, they still can be very unpleasant, leading to considerable distress among the public and often generating citizen complaints to local governments and regulatory agencies. Odor impacts on residential areas and other sensitive receptors, such as daycare centers and schools, are of particular concern. Major sources of odor-

related complaints by the general public commonly include wastewater treatment facilities, landfill disposal facilities, food processing facilities, agricultural activities, and various industrial activities (e.g., petroleum refineries, chemical and fiberglass manufacturing, painting/coating operations, feed lots/dairies, composting facilities, landfills, and transfer stations).

## **REGULATORY CONTEXT**

### **AMBIENT AIR QUALITY STANDARDS**

#### **Federal**

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

The CAA required EPA to establish the national ambient air quality standards (NAAQS), and to also establish 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 CAA Amendments of 1990 made major changes in deadlines for attaining NAAQS and in the actions required of areas of the nation that exceed these standards. Under the CAA, state and local agencies in areas that exceed the NAAQS are required to develop and implement air pollution control plans designed to achieve and maintain the NAAQS established by EPA. States may also establish their own standards, provided that state standards are at least as stringent as the NAAQS. California has established California ambient air quality standards (CAAQS) pursuant to California Health and Safety Code Section 39606(b) and its predecessor statutes. The NAAQS and CAAQS are presented in Table 2.

The CAA requires states to develop an air quality control plan referred to as the State Implementation Plan (SIP). The SIP contains the strategies and control measures that California will use to attain the NAAQS. EPA approved the California SIP in September 1996. The SIP became effective on February 7, 1997. Pursuant to the recently adopted SIP, the State of California will strive for compliance with federal ozone standards by the year 2010. This will be accomplished using a combination of performance standards and market-based programs which will speed the introduction of cleaner technology and expand compliance flexibility (ARB 2006).

#### **State of California**

The California Air Resources Board (ARB) 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. The CCAA requires that all air districts in the state endeavor to achieve and maintain CAAQS by the earliest practical date. The CCAA mandates that districts focus particular attention on reducing emissions from transportation and area-wide emission sources, and the act provides districts with new authority to regulate indirect sources. Air districts in violation of CAAQS are required to prepare an Air Quality Attainment Plan (AQAP) that includes measures for attaining the CCAA mandates.

**Table 2  
Summary of Ambient Air Quality Standards**

Pollutant	Averaging Time	California Standards <sup>a, d</sup>	National Standards <sup>b, d</sup>	
			Primary <sup>e</sup>	Secondary <sup>f</sup>
Ozone (O <sub>3</sub> )	1-hour	0.09 ppm (180 µg/m <sup>3</sup> )	–	Same as Primary
	8-hour	0.070 ppm (137 µg/m <sup>3</sup> ) <sup>c</sup>	0.08 ppm (157 µg/m <sup>3</sup> )	
Particulate Matter (PM <sub>10</sub> )	AAM	20 µg/m <sup>3</sup>	50 µg/m <sup>3</sup> <sup>f</sup>	Same as Primary
	24-hour	50 µg/m <sup>3</sup>	150 µg/m <sup>3</sup>	–
Fine Particulate Matter (PM <sub>2.5</sub> )	AAM	12 µg/m <sup>3</sup>	15 µg/m <sup>3</sup>	Same as Primary
	24-hour	No Standard	65 µg/m <sup>3</sup>	–
Carbon Monoxide (CO)	1-hour	20 ppm (23 mg/m <sup>3</sup> )	35 ppm (40 mg/m <sup>3</sup> )	None
	8-hour	9 ppm (10 mg/m <sup>3</sup> )	9 ppm (10 mg/m <sup>3</sup> )	
	8-hour-Lake Tahoe	6 ppm (7 mg/m <sup>3</sup> )	–	
Nitrogen Dioxide (NO <sub>2</sub> )	AAM	–	0.053 ppm (100 µg/m <sup>3</sup> )	Same as Primary
	1-hour	0.25 ppm (470 µg/m <sup>3</sup> )	–	
Sulfur Dioxide (SO <sub>2</sub> )	AAM	–	0.03 ppm (80 µg/m <sup>3</sup> )	–
	24-hour	0.04 ppm (105 µg/m <sup>3</sup> )	0.14 ppm (365 µg/m <sup>3</sup> )	–
	3-hour	–	–	0.5 ppm (1,300 µg/m <sup>3</sup> )
	1-hour	0.25 ppm (655 µg/m <sup>3</sup> )	–	–
Lead	30-day Average	1.5 µg/m <sup>3</sup>	–	–
	Calendar Quarter	–	1.5 µg/m <sup>3</sup>	Same as Primary
Sulfates	24-hour	25 µg/m <sup>3</sup>	No Federal Standards	
Hydrogen Sulfide	1-hour	0.03 ppm (42 µg/m <sup>3</sup> )		
Vinyl Chloride	24-hour	0.01 ppm (26 µg/m <sup>3</sup> )		
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%.		

<sup>a</sup> California standards for O<sub>3</sub>, CO (except Lake Tahoe), sulfur dioxide (1- and 24-hour), nitrogen dioxide, PM (PM<sub>10</sub> and PM<sub>2.5</sub>), and visibility-reducing particles are values that are not to be exceeded. All others are not to be equaled or exceeded.

<sup>b</sup> National standards (other than O<sub>3</sub>, PM, and those based on annual averages or annual arithmetic means) are not to be exceeded more than once a year. The O<sub>3</sub> standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard. For PM<sub>10</sub>, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m<sup>3</sup> is equal to or less than one. For PM<sub>2.5</sub>, the 24-hour standard is attained when 98 percent of daily concentrations, average over three years, are equal to or less than the standard.

<sup>c</sup> This concentration was approved by the Air Resources Board on April 28, 2005 and is expected to become effective in early 2006.

<sup>d</sup> Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based on a reference temperature of 25°C and a reference pressure of 760 torr.

<sup>e</sup> The levels of air quality necessary to protect the public health.

<sup>f</sup> The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

AAM = Annual Arithmetic Mean  
 µg/m<sup>3</sup> = Micrograms per Cubic Meter  
 mg/m<sup>3</sup> = Milligrams per Cubic Meter  
 ppm = Parts per Million

Source: ARB 2006; EPA 2006

## Regional

### Shasta County Air Quality Management District

The project site is located in the jurisdiction of the Shasta County Air Quality Management District (AQMD). The AQMD is designated by law to adopt and enforce regulations to achieve and maintain ambient air quality standards. The AQMD, along with other air districts in the Northern Sacramento Valley Air Basin (NSVAB), have committed to jointly prepare the NSVAB Air Quality Attainment Plan for the purpose of achieving and maintaining healthful air quality throughout the air basin. The Plan was initially adopted in 1994 and updated on a triennial basis. The most recent update occurred in 2003 and was formally adopted in March of 2004. The triennial updates of the NSVAB Air Quality Attainment Plan address the progress made in implementing the AQAP and propose modifications to the strategies necessary to attain the California ambient air quality standard for the 1-hour ozone standard at the earliest practicable date. Like previous updates of the Air Quality Attainment Plan, the 2003 AQAP focuses on adoption and implementation of control measures for stationary sources, area wide sources, indirect sources, and addresses public education and information programs. The 2003 AQAP also addresses the effect that pollutant transport has on the NSVAB's ability to meet and attain the State standards (NSVAB 2004).

### City of Redding General Plan

The City of Redding General Plan includes various air quality related goals and policies. These goals and policies are intended to help protect and improve the City's air quality and to help the region attain and maintain federal and state ambient air quality standards. Goals and policies within the Air Quality Element that pertain to this project include the following:

**Goal 1**            Effective communication, cooperation and coordination in developing and implementing community and regional air quality programs.

*Policy 1*          The City will require an air quality impact analysis using the recommended methods promulgated by the Air Quality Management District (AQMD) for all projects that are subject to CEQA review and which exceed emissions thresholds established by the AQMD.

*Policy 2*          The City Department of Planning and Community Development will submit a report to the Planning Commission for approval which identifies the cumulative transportation and air quality impacts of all General Plan Amendments approved during the previous year in the Annual General Plan Status Report.

**Goal 2**            Reduce motor vehicle trips and vehicle miles traveled and increase average vehicle ridership (AVR).

*Policy 17*        The City shall make air quality and mobility prime considerations when reviewing any proposed change to the land-use pattern. Such consideration shall include, as much as possible, increased transit and pedestrian mobility.

*Policy 18*        The City shall, as much as possible, plan high-density development in areas that can be fitted with a transit system.

- Policy 19* The City shall encourage mixed-use developments near employment centers that provide commercial services such as day-care centers, restaurants, banks, and stores.
- Policy 21* The City will work with the Redding Area Bus Authority in planning multi-modal transfer sites that incorporate auto parking areas, bike parking, transit, pedestrian and bicycle paths, and park-and-ride pickup points.
- Policy 22* The City shall encourage compact infill development.
- Policy 24* The City shall encourage projects within urban areas that will improve the effectiveness of the transit system and will not adversely affect existing single-family development.
- Policy 27* As a condition of project approval, the City shall require dedication of land for bus turnouts and shelters at sites deemed appropriate and necessary.
- Policy 28* The City shall ensure that the Regional Bikeway Plan includes a comprehensive system of bikeways and pedestrian paths, which is planned and constructed in accordance with the adopted plan, based on analysis of existing and future use by the area to be served.

**Goal 3** Reduce particulate matter emissions from sources under the jurisdiction of the City.

- Policy 29* The City will require measures to reduce particulate emissions from construction, grading, and demolition to the maximum extent feasible.

**AMBIENT AIR QUALITY**

The Redding-Health Department Roof Air Monitoring Station is the nearest station to the proposed project site, measuring ambient concentrations of ozone and airborne particulate matter. Table 3 provides a summary of the air quality monitoring data obtained from this station for the past three years of available data (2003-2005). As indicated in Table 3, state and federal standards for ozone have been exceeded on several occasions over the past three years of available data (i.e., 2003-2005). The state standard for PM<sub>10</sub> was exceeded on one occasion during this same time period.

**ATTAINMENT STATUS DESIGNATIONS**

An attainment designation for an area signifies that pollutant concentrations did not violate the standard for that pollutant in that area. A nonattainment designation indicates that a pollutant concentration violated the standard at least once, excluding those occasions when a violation(s) was caused by an exceptional event, as defined in the criteria.

All Northern Sacramento Valley air districts have been designated as nonattainment areas for the state standards for PM<sub>10</sub>. Moreover, all of Northern Sacramento Valley air districts, with the exception of Colusa and Glenn counties have been designated as nonattainment areas for the state standard for ozone. Colusa and Glenn counties have been designated as nonattainment transitional areas for ozone. In 1997, Butte and Glenn counties were designated as nonattainment transitional areas for the state ozone standard of 0.09 parts per million with one hour averaging time. This classification has since been amended, with Butte County reverting back to nonattainment for ozone. The nonattainment transitional designation is made by operation of law if, during a single calendar year,

the state standard is not exceeded more than three times at any monitoring location within the district.

<b>Table 3</b>			
<b>Summary of Ambient Air Quality Data</b>			
Pollutant Standards	2003	2004	2005
Redding-Health Department Roof Air Monitoring Station			
Ozone (O <sub>3</sub> )			
- Maximum concentration (1-hr/8-hr, ppm)	0.093/0.072	0.131/0.096	0.102/0.089
- Number of days state standard exceeded	0	2	3
- Number of days national standard (1-hr/8-hr) exceeded	0/0	1/2	0/3
Respirable Particulate Matter (PM <sub>10</sub> )			
- Maximum daily concentration (National/State, µg/m <sup>3</sup> )	33.0/35.0	76.0/74.0	30.0/30.0
- Number of days state standard exceeded	0	1	0
- Number of days national standard exceeded	0	0	0
Fine Particulate Matter (PM <sub>2.5</sub> )			
- Maximum 24-hour concentration (National/State, µg/m <sup>3</sup> )	34.0/34.0	26.0/26.0	20.0/20.0
- Number of days national standard exceeded	0	0	0
µg/m <sup>3</sup> Micrograms per Cubic Meter			
ppm        Parts per Million			
Source: ARB 2006			

## TOXIC AIR CONTAMINANTS

### Federal

Title III of the CAA requires the U.S. EPA to promulgate national emissions standards for hazardous air pollutants (NESHAP) for certain categories of sources that emit one or more pollutants identified as HAPs. Emission standards may be different between "major sources" and "area sources" of TACs. (Major sources are defined as stationary sources with potential to emit more than 10 tons per year [tpy] of any TAC or more than 25 tpy of any combination of TACs; all other sources are considered area sources.) The emission standards are to be promulgated in two phases. In the first phase (1992-2000), EPA developed technology-based emission standards designed to produce the maximum emission reduction achievable. These standards are generally referred to as requiring maximum achievable control technology. For area sources, the standards may be different, based on generally available control technology. In the second phase (2001- 2008), EPA is required to promulgate health risk-based emissions standards where such standards are deemed necessary to address risks remaining after implementation of the technology-based NESHAP standards.

### State of California

#### The Tanner Toxics Act (Assembly Bill 1807)

The Tanner Toxics Act established the California toxic air contaminant control program (Assembly Bill [AB] 1807, California Health and Safety Code Section 39666 *et seq.*) to identify and control TACs. Under the Tanner Toxics Act, ARB is required to identify a substance as a TAC based on the review of the scientific data and the recommendations by both the California Office of Environmental and Health Hazard Assessment (OEHHA) and the Scientific Review Panel. After designation, ARB investigates appropriate measures to limit emissions of the TACs. These measures may include emission limitations, control technologies, operation and maintenance requirements, closed system engineering, cost, or substitution of compounds. ARB then prepares a report on the appropriate

degree of regulation and adopts air toxics control measures. These control measures are the minimum regulations that must be imposed by each of the local air districts in the form of regulations. Districts must adopt rules that are at least as stringent as state rules.

Air Toxics "Hot Spots" Information and Assessment Act

The Air Toxics "Hot Spots" Information and Assessment Act (AB 2588) is a state law enacted in 1987. The law requires certain facilities to submit information regarding emissions of more than 550 TACs to their local air pollution control districts. The act addresses public concerns that emissions from individual facilities might cause local concentration of air toxics "hot spots" at a level where individuals may be exposed to an excess risk of adverse health effects. The program requires facilities to notify all exposed persons if it is determined that there is a significant health risk. AB 2588 was amended in 1993 by Senate Bill (SB) 1731, Facility Toxic Air Contaminant Risk Reduction Audit and Plan. In accordance with SB 1731, local air districts are required to establish a program to reduce risks from existing facilities that are deemed to pose a significant health risk.

**THRESHOLDS OF SIGNIFICANCE**

The SHAAQMD has adopted air quality thresholds for determination of impact significance for projects subject to CEQA review. These thresholds are consistent with the New Source Review Rule 2-1 adopted by the Air Pollution Control Board in 1993 as required by the CCAA (City of Redding 2000). The thresholds of significance are summarized in Table 4.

<b>Table 4</b>			
<b>SHAAQMD-Recommended Thresholds of Significance</b>			
	Emissions (lbs/day)		
	NO <sub>x</sub>	ROG	PM <sub>10</sub>
Level "A" Thresholds	25	25	80
Level "B" Thresholds	137	137	137
<p>Apply Standard Mitigation Measures (SMM) to all projects based on potential air quality impacts.</p> <p>Apply SMM and appropriate Best Available Mitigation Measures (BAMM) when a project exceeds Level "A" thresholds. The appropriate type and number of BAMM applied to a project will be based on the unique characteristics of the project. BAMM will be selected from a list of measures kept updated by the Shasta County Planning Department (SCPD) and the Shasta County Air Quality Management District (AQMD).</p> <p>Apply SMM, BAMM, and special BAMM (when project exceeds Level "B" thresholds) based on their emission reduction potential to lower project emissions below Level "B" thresholds. The AQMD will advise the SCPD of the efficiency of proposed emission measures as part of the effort to reduce project emissions below Level "B" thresholds.</p> <p>If application of the above procedures results in reducing project emissions below Level "B" thresholds, the project can proceed with an environmental determination of a Mitigated Negative Declaration assuming other project impacts do not require more extensive environmental review.</p> <p>If project emissions cannot be reduced to below Level "B" thresholds, emission offsets will be required. The SCPD may seek the assistance of the AQMD regarding other efforts and measures that could be used to reduce unmitigated emissions exceeding the 137 lbs. per day. If, after applying the emissions offsets, the project emissions still exceed the Level "B" threshold, an EIR will be required before the project can be considered for action by the reviewing authority.</p> <p>Sources: City of Redding 2000</p>			

In addition to the quantitative thresholds identified in Table 4, the proposed project would have a significant impact on air quality if it would:

- violate any ambient air quality standard; or
- substantially contribute to an existing or projected violation of an ambient air quality standard; or
- expose sensitive receptors (i.e., individuals with respiratory diseases, the young, the elderly) to substantial pollutant concentrations; or
- expose members of the public to frequent objectionable odors or substantial pollutant concentrations.

## IMPACTS AND MITIGATION MEASURES

### Impact Summary

<b>Table 5 Summary of Project Impacts</b>				
Would the project result in:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
A. Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D. Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
E. Create objectionable odors affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

## Impact Discussion

### **IMPACT A: Conflict with or obstruct implementation of the applicable air quality plan?**

***Less Than Significant With Mitigation Incorporated.*** A project would be considered to conflict with or obstruct implementation of the regional air quality plans if it would be inconsistent with the emissions inventories contained in the regional air quality plans. Emission inventories are developed based on projected increases in population growth and vehicle miles traveled (VMT) within the region. Project-generated increases in population or VMT that would exceed the SHAAQMD's project-level significance thresholds could, therefore, potentially conflict with regional air quality attainment plans.

The proposed project would result in a slight increase in the population and VMT beyond that already approved for the project area. As noted in the traffic analysis prepared for this project, the proposed changes in land use designations would result in an overall increase of approximately 4,092 daily trips on area roadways.

Implementation of the proposed project would result in increases in short-term and long-term emissions that would exceed SHAAQMD's project-level significance thresholds. Short-term and long-term increases in regional criteria air pollutants could contribute to regional nonattainment air quality conditions. As a result, this impact is considered ***potentially significant, subject to mitigation.*** Refer to "Impact C" of this report for more detailed discussions of short-term and long-term air quality impacts attributable to the proposed project and proposed mitigation measures. With implementation of proposed mitigation measures, as noted in "Impact C", this impact would be considered ***less than significant.***

### **IMPACT B: Violate any air quality standard or contribute substantially to an existing or projected air quality violation?**

***Less Than Significant With Mitigation Incorporated.*** Implementation of the proposed project would result in increases in short-term and long-term emissions that could contribute to regional nonattainment air quality conditions, as well as localized increases in pollutants concentrations at nearby receptors. As a result, this impact is considered ***potentially significant, subject to mitigation.*** Refer to "Impact C" of this report for more detailed discussions of short-term and long-term air quality impacts attributable to the proposed project and proposed mitigation measures. With implementation of proposed mitigation measures, as noted in "Impact C", this impact would be considered ***less than significant.***

### **IMPACT C: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?**

Increases in emissions attributable to the proposed project would occur during construction and long-term operation of the proposed project. Short-term construction and long-term operational air quality impacts associated with the proposed project are discussed separately, as follows:

## Short-term Construction Emissions

**Less Than Significant With Mitigation Incorporated.** Construction-generated emissions are short-term and of temporary duration, lasting only as long as construction activities occur, but possess the potential to represent a significant air quality impact. The construction and development of residential and commercial uses would result in the temporary generation of emissions resulting from site grading and excavation, road paving, motor vehicle exhaust associated with construction equipment and worker trips, and the movement of construction equipment, especially on unpaved surfaces. Emissions of airborne particulate matter are largely dependent on the amount of ground disturbance associated with site preparation activities.

Short-term onsite construction emissions of ROG and NO<sub>x</sub> were estimated using the ARB-approved URBEMIS 2002 Version 8.7 computer program. URBEMIS is designed to model construction emissions for land use development projects and allows for the input of project-specific information. Emissions were calculated based on default parameters contained in the model and assuming a maximum area of daily disturbance could potentially equal one fourth of the total developed area (SMAQMD 2006, SJVAPCD 2006). Estimated daily construction-generated emissions of ROG, NO<sub>x</sub> and PM<sub>10</sub> attributable to the proposed project are summarized in Table 6.

As depicted, estimated uncontrolled emissions associated with site grading and excavation would generate approximately 60 lbs/day of ROG, 395 lbs/day of NO<sub>x</sub>, and 885 lbs/day of PM<sub>10</sub>. Building construction activities would generate approximately 21 lbs/day of ROG, 121 lbs/day of NO<sub>x</sub> and 5 lbs/day of PM<sub>10</sub>. Based on the modeling conducted, estimated daily emissions associated with initial site preparation activities (i.e., grading and excavation) could potentially exceed the SHAAQMD's significance thresholds. This impact is, therefore, considered **potentially significant, subject to mitigation**.

<b>Table 6</b>			
<b>Short-Term Unmitigated Construction Emissions</b>			
Source	Emissions (lb/day) <sup>1</sup>		
	ROG	NO <sub>x</sub>	PM <sub>10</sub>
Site Grading & Excavation	60.34	394.70	884.85
Building Construction <sup>2</sup>	20.65	121.06	4.96
Maximum Daily Emissions	60.34	394.70	884.85
SHAAQMD Significance Threshold (Level A/B):	25/137	25/137	80/137
<p>1. Calculated using the Urbemis2002 (v8.7) computer model. Represents maximum daily emissions, based on proposed land uses and default parameters contained in the model. Assumes maximum daily area of disturbance of 21.73 acres. Off-highway equipment required derived from maximum daily area of disturbance per recommended Urbemis2002 guidance (SMAQMD 2006, SJVAPCD 2006).</p> <p>2. Includes off-gas, off/on-road diesel equipment, and worker commute trips.</p>			

**Mitigation Measure:** SHAAQMD-recommended Standard and Best Available mitigation measures shall be implemented. These measures include, but are not limited to, the following:

- All disturbed areas, including storage piles, that are not being actively used shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, or vegetative ground cover.
- Provide temporary traffic control as appropriate during all phases of construction to improve traffic flow (e.g., flag person).
- The applicant shall be responsible for ensuring that all adequate dust control measures are implemented in a timely and effective manner during all phases of project development and construction.
- All material excavated, stockpiled, or graded shall be sufficiently watered to prevent fugitive dust from leaving property boundaries and causing a public nuisance or a violation of an ambient air standard. Watering shall occur at least twice daily with complete site coverage, preferably in the mid-morning and after work is completed each day.
- All onsite unpaved roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant.
- Onsite vehicle speeds on unpaved surfaces shall be limited to 15 mph.
- All land clearing, grading, earth moving or excavation activities on the project site shall be suspended when winds are expected to exceed 20 miles per hour.
- All inactive portions of the development site shall be seeded and watered until a suitable grass cover is established. Seeding shall be with an approved native seed mix.
- The applicant shall be responsible for applying Department of Public Works approved non-toxic soil stabilizers (according to manufacturers' specifications) to all inactive construction areas (previously graded areas which remain inactive for 96 hours), in accordance with the Shasta County Grading Ordinance.
- When materials are transported offsite, all material shall be covered and effectively wetted to limit visible dust emissions, or at least 6 inches of freeboard space from the top of the container shall be maintained.
- All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at least once every 24 hours when operations are occurring.
- Schedule construction activities that affect traffic flow to off-peak hours.
- Install wheel washers where vehicles enter and exit unpaved roads onto paved roads, or wash off trucks and any equipment leaving the site each trip.
- Cleared vegetation shall be treated by legal means other than open burning, such as chipping, shredding, or grinding.
- The project applicant shall provide a Construction Emissions Mitigation Plan for approval by the lead agency, in consultation with SHAAQMD, 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<sub>x</sub> reduction and 45-percent particulate reduction compared to the most recent ARB 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, particulate matter traps, engine retrofit technology, after-treatment products, and/or such other options as become available.

- The Construction Emissions Mitigation Plan shall identify construction schedules for onsite and offsite activities. Construction activities shall be scheduled to minimize concurrent activities involving extensive use of off-highway equipment (e.g., onsite grading, offsite road construction) from occurring on the same day during the summer months when emissions of ozone precursors (e.g., ROG and NO<sub>x</sub>) are of greatest concern.
- The project representative shall submit to the lead agency and SHAAQMD a comprehensive inventory of all off-road construction equipment, equal to or greater than 50 hp, that will be used an aggregate of 40 or more hours during any portion of the project. The inventory shall be updated and submitted monthly throughout the duration of the project, except that an inventory shall not be required for any 30-day period in which no construction operations occur. At least 48 hours before subject heavy-duty off-road equipment is used, the project representative shall provide the lead agency and SHAAQMD with the anticipated construction timeline including start date, and the name and phone number of the project manager and onsite foreman.
- The primary contractor shall be responsible to ensure that all construction equipment is properly tuned and maintained.
- Off-road construction equipment shall not be left idling when not in use.
- Maximum area of active daily disturbance (i.e., grading, excavation, scraping) shall be limited to 9 acres, or less.

*Timing/Implementation: Prior to and during construction*

*Enforcement/Monitoring: Shasta County AQMD, Shasta County Dept. of Resource Management*

### **Significance After Mitigation**

With implementation of the above mitigation measures, predicted maximum daily emissions associated with site preparation activities would be reduced to approximately 25 lbs/day of ROG, 131 lbs/day of NO<sub>x</sub>, and 113 lbs/day of PM<sub>10</sub>. Implementation of the above mitigation measures would reduce maximum daily emissions to below SHAAQMD's "Level B" significance thresholds. Implementation of proposed mitigation measures would also ensure consistency with applicable General Plan policies related to air quality. With mitigation, this impact is considered *less than significant*.

### **Long-term Operational Emissions**

**Less Than Significant With Mitigation Incorporated.** Long-term increases in area- and mobile-source emissions associated with the proposed project were modeled using the ARB-approved URBEMIS2002 (v8.7) computer program. Modeling was conducted using default parameters contained in the model and trip generation rates for proposed land uses obtained from the traffic analysis prepared for this project. Operational emissions assume compliance with Shasta County AQMD Rule 3:23, *Fireplace and Solid Fuel Heating Device Usage*; which prohibits the use of non-EPA certified wood-burning devices. Estimated long-term operational emissions attributable to the proposed project are summarized in Table 7.

<b>Table 7 Long-term Operational Emissions</b>			
Source	Estimated Emissions (lbs/day)		
	ROG	NO <sub>x</sub>	PM <sub>10</sub>
<i>WINTER CONDITIONS</i>			
Area Sources			
Natural Gas-Fired Appliances	0.31	4.07	0.01
Landscape Maintenance	No Winter Emissions		
Consumer Products	20.55	--	--
Architectural Coatings	10.01	--	--
Total (Area Source Emissions):	30.87	4.07	0.01
Mobile Sources	40.84	66.68	55.97
TOTAL (Area & Mobile Sources):	71.71	70.75	55.98
SHAAQMD Significance Threshold (Level A/B):	25/137	25/137	80/137
<i>SUMMER CONDITIONS</i>			
Area Sources			
Natural Gas-Fired Appliances	0.31	4.07	0.01
Landscape Maintenance	1.05	0.13	0.02
Consumer Products	20.55	--	--
Architectural Coatings	10.01	--	--
Total (Area Source Emissions):	31.92	4.20	0.03
Mobile Sources	31.86	55.74	55.97
TOTAL (Area & Mobile Sources):	63.78	59.94	56.0
SHAAQMD Significance Threshold (Level A/B):	25/137	25/137	80/137
Calculated using the Urbemis2002 (v8.7) computer model. Represents maximum daily emissions, based on proposed land uses and default parameters contained in the model for winter and summer conditions. Modeling assumes compliance with Shasta County AQMD Rule 3:23, <i>Fireplace and Solid Fuel Heating Device Usage</i> ; which prohibits the use of non-EPA certified wood-burning devices. Operational emissions assume an estimated project buildout year of 2008, based on default construction duration estimates identified in the model.			

Based on the modeling conducted, the proposed land uses would generate maximum daily emissions of approximately 72 lbs/day of ROG, 71 lbs/day NO<sub>x</sub>, and 56 lbs/day of PM<sub>10</sub> during the

winter months. Emissions of ROG and NO<sub>x</sub> during the summer months would decrease slightly to approximately 62 lbs/day and 60 lbs/day, respectively. Predicted daily operational emissions would not exceed SHAAQMD's "Level B" thresholds. However, emissions of ROG and NO<sub>x</sub> would exceed SHAAQMD's corresponding "Level A" thresholds of 25 lbs/day for ROG and NO<sub>x</sub>. As a result, this impact would be considered *potentially significant, subject to mitigation*.

**Mitigation Measure:** The following mitigation measure shall be implemented:

- Provide energy-efficient process systems, such as water heaters, furnaces, and boiler units.
- Contribute to traffic-flow improvements that are not growth-inducing (e.g., right-of-way, capitol improvements, etc.)
- Install an electrical outlet at the front and back of all residential units for electrical yard equipment.

*Timing/Implementation:* Prior to approval of the final map and, where applicable, building permits.

*Enforcement/Monitoring:* City of Redding Development Services Department, Shasta County Air Quality Management District

### **Significance After Mitigation**

With mitigation, project-generated emissions would be below SHAAQMD's "Level B" significance thresholds of 137 lbs/day/pollutant. With mitigation, this impact is considered *less than significant*.

### **IMPACT D: Expose sensitive receptors to substantial pollutant concentrations?**

*Less Than Significant.* Localized concentrations of primary concern are typically associated with mobile-source emissions of carbon monoxide (CO), as well as emissions of toxic air contaminants (TAC) from both stationary and mobile sources.

#### Carbon Monoxide

Local mobile-source CO emissions typically occur near congested roadway intersections and are a direct function of ambient concentrations, traffic volume, speed, and delay. Transport of CO is extremely limited because it disperses rapidly with distance from the source under normal meteorological conditions. In areas with high background CO concentrations, unhealthy concentrations of CO can occur in near signalized roadway intersections that are projected to operate at unacceptable levels of service (i.e., LOS E or F).

Although some intersections near the project site are projected to operate at or near unacceptable levels, mitigation measures have been provided in the transportation analysis prepared for this project that would improve the level of service at these intersections to within acceptable levels, thereby reducing vehicle congestion and associated carbon monoxide levels. Furthermore, because Shasta County does not experience high background CO concentrations, localized mobile-source concentrations at nearby intersections would not be anticipated to exceed applicable standards. As a result, exposure to localized concentrations of CO would be considered *less than significant*.

## Toxic Air Contaminants

No major existing stationary sources of TACs that would affect proposed onsite sensitive receptors were identified in the vicinity of the proposed project site. Existing sources of TACs located in the project area are primarily associated with heavy-duty vehicles traveling on Interstate 5 (I-5), which is located adjacent to and west of the project site. Proposed onsite residential land uses would be located approximately 150 feet from I-5.

In April 2005, the California Air Resources Board (ARB) released the "Air Quality and Land Use Handbook: A Community Health Perspective." The handbook is an informal guide that provides guidance related to the siting of sensitive land uses, including residential dwellings, near common emission sources. In this handbook, the ARB recommends that sensitive land uses should generally not be located within approximately 500 feet of a major freeway or urban roads with 100,000 vehicles per day, due to health concerns typically associated with mobile-source TAC exposure. This recommendation was based on analyses indicating that incremental increases in health risks were strongest within 300 feet of a freeway and that a 70% reduction in ambient particulate levels is seen at 500 feet from the source. Mobile-source pollutant concentrations were typically greatest along major freeways with approximately 10,000 trucks per day. Studies of ambient concentrations in the vicinity of major roadways, as identified in the ARB handbook, suggest a substantial benefit to implementation of a 500-foot setback (ARB 2005). The ARB's recommended setback distance of 500 feet does not, however, take into account expected declines in vehicle emissions predicted to occur in future years or site-specific conditions, such as vehicle traffic volumes, number of heavy-duty vehicles, and local meteorological conditions.

In the State of California, emissions from on-road mobile sources are regulated by the ARB. The ARB has developed the Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles, which includes measures to reduce diesel-exhaust PM by 75 percent by year 2010. With continued implementation of these measures, an 85-percent reduction in diesel-exhaust PM and associated health risks is anticipated by year 2020 (ARB 2000). It is also important to note that vehicle traffic along adjacent segments of I-5 are substantially less than volumes noted in the ARB handbook. Based on data obtained from the California Department of Transportation, vehicle traffic volumes average approximately 56,000 vehicles/day, of which approximately 5,276 are medium and heavy-duty trucks (Caltrans 2006, Caltrans 2004). Given projected decreases in future diesel-exhaust PM emissions and relatively low traffic volume on adjacent segments of I-5, localized concentrations of mobile-source TACs at the project site are anticipated to be substantially less than those upon which the ARB's siting recommendations are based. It is also important to note that the ARB's siting recommendations are advisory in nature. The ARB's handbook does not identify acceptable thresholds of significance or recommended methodologies for the analysis of health risks associated with the siting of sensitive land uses in the vicinity of major transportation corridors. The California Air Pollution Control Officers Association and various air districts throughout the State are currently working on the development of recommended thresholds and methodologies for the analysis of air quality impacts for CEQA purposes. However, if desired, the following measure could be considered to enhance the dispersion of emissions from vehicle traffic on I-5 and reduce potential onsite pollutant concentrations:

- Construct walls and/or plant dense tiered vegetation along the western boundary of the project site.

### ***IMPACT E: Create objectionable odors affecting a substantial number of people?***

***Less Than Significant.*** The occurrence and severity of odor impacts depends on numerous factors, including: the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of the receptors. While offensive odors rarely cause any physical harm, they still can be very unpleasant, leading to considerable distress among the public and often generating citizen complaints to local governments and regulatory agencies. Projects with the potential to frequently expose members of the public to objectionable odors would be deemed to have a significant impact.

No major existing sources of odors have been identified in the project vicinity. In addition, the proposed project is not anticipated to result in the installation of any major odor emission sources that would result in a potentially significant impact to the occupants of the proposed onsite or existing offsite land uses. As a result, potential exposure of sensitive receptors to odors would be considered ***less than significant.***

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## APPENDIX A AIR QUALITY MODELING

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URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002 Version 8.7\Projects2k2\HighlandParkWithMit.urb  
 Project Name: Highland Park  
 Project Location: Mountain Counties and Rural Counties  
 On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

### SUMMARY REPORT (Pounds/Day - Summer)

#### CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2007 ***							
TOTALS (lbs/day, unmitigated)	60.34	394.70	502.53	0.01	884.85	15.79	869.06
*** 2008 ***							
TOTALS (lbs/day, unmitigated)	14.74	99.00	119.57	0.00	4.55	4.21	0.34
*** 2009 ***							
TOTALS (lbs/day, unmitigated)	14.63	93.80	122.13	0.00	4.28	3.94	0.34
*** 2010 ***							
TOTALS (lbs/day, unmitigated)	20.65	121.06	164.95	0.01	4.76	4.41	0.35

#### AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day, unmitigated)	31.92	4.20	9.78	0.04	0.03

#### OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day, unmitigated)	31.86	55.74	401.18	0.32	55.97

#### SUM OF AREA AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10
TOTALS (lbs/day, unmitigated)	63.77	59.93	410.96	0.35	56.00

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URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002 Version 8.7\Projects2k2\HighlandParkWithMit.urb  
 Project Name: Highland Park  
 Project Location: Mountain Counties and Rural Counties  
 On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

### SUMMARY REPORT (Pounds/Day - Winter)

#### CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2007 ***							
TOTALS (lbs/day, unmitigated)	60.34	394.70	502.53	0.01	884.85	15.79	869.06
*** 2008 ***							
TOTALS (lbs/day, unmitigated)	14.74	99.00	119.57	0.00	4.55	4.21	0.34

TOTALS (lbs/day,unmitigated)	14.74	99.00	119.57	0.00	4.55	4.21	0.34
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*** 2009 ***	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
TOTALS (lbs/day,unmitigated)	14.63	93.80	122.13	0.00	4.28	3.94	0.34

*** 2010 ***	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
TOTALS (lbs/day,unmitigated)	20.65	121.06	164.95	0.01	4.76	4.41	0.35

AREA SOURCE EMISSION ESTIMATES

TOTALS (lbs/day,unmitigated)	ROG	NOx	CO	SO2	PM10
	269.25	11.96	437.61	1.03	64.98

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

TOTALS (lbs/day,unmitigated)	ROG	NOx	CO	SO2	PM10
	40.84	66.68	475.57	0.32	55.97

SUM OF AREA AND OPERATIONAL EMISSION ESTIMATES

TOTALS (lbs/day,unmitigated)	ROG	NOx	CO	SO2	PM10
	310.09	78.64	913.18	1.35	120.95

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URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002 Version 8.7\Projects2k2\HighlandParkWithMit.urb  
 Project Name: Highland Park  
 Project Location: Mountain Counties and Rural Counties  
 On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT  
(Pounds/Day - Winter)

Construction Start Month and Year: June, 2007  
 Construction Duration: 36  
 Total Land Use Area to be Developed: 94.7 acres  
 Maximum Acreage Disturbed Per Day: 86.9 acres  
 Single Family Units: 181 Multi-Family Units: 239  
 Retail/Office/Institutional/Industrial Square Footage: 0

CONSTRUCTION EMISSION ESTIMATES UNMITIGATED (lbs/day)

Source	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2007***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	869.00	-	869.00
Off-Road Diesel	59.63	393.28	486.47	-	15.76	15.76	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.71	1.42	16.06	0.01	0.09	0.03	0.06
Maximum lbs/day	60.34	394.70	502.53	0.01	884.85	15.79	869.06
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	13.53	103.26	100.15	-	4.60	4.60	0.00
Bldg Const Worker Trips	1.32	0.80	16.91	0.00	0.35	0.01	0.34
Arch Coatings Off-Gas	0.00	-	-	-	-	-	-
Arch Coatings Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Off-Gas	0.00	-	-	-	-	-	-
Asphalt Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
Asphalt On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	14.85	104.07	117.06	0.00	4.96	4.62	0.34
Max lbs/day all phases	60.34	394.70	502.53	0.01	884.85	15.79	869.06

\*\*\* 2008\*\*\*

Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	13.53	98.26	103.81	-	4.20	4.20	0.00
Bldg Const Worker Trips	1.21	0.75	15.76	0.00	0.35	0.01	0.34
Arch Coatings Off-Gas	0.00	-	-	-	-	-	-
Arch Coatings Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Off-Gas	0.00	-	-	-	-	-	-
Asphalt Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
Asphalt On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	14.74	99.00	119.57	0.00	4.55	4.21	0.34
Max lbs/day all phases	14.74	99.00	119.57	0.00	4.55	4.21	0.34

\*\*\* 2009\*\*\*

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Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	13.53	93.11	107.60	-	3.92	3.92	0.00
Bldg Const Worker Trips	1.10	0.68	14.54	0.00	0.35	0.01	0.34
Arch Coatings Off-Gas	0.00	-	-	-	-	-	-
Arch Coatings Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Off-Gas	0.00	-	-	-	-	-	-
Asphalt Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
Asphalt On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	14.63	93.80	122.13	0.00	4.28	3.94	0.34
Max lbs/day all phases	14.63	93.80	122.13	0.00	4.28	3.94	0.34

\*\*\* 2010\*\*\*

Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 2 - Site Grading Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Phase 3 - Building Construction							
Bldg Const Off-Road Diesel	13.53	88.11	111.25	-	3.52	3.52	0.00
Bldg Const Worker Trips	1.00	0.63	13.38	0.00	0.35	0.01	0.34
Arch Coatings Off-Gas	0.00	-	-	-	-	-	-
Arch Coatings Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Asphalt Off-Gas	1.05	-	-	-	-	-	-
Asphalt Off-Road Diesel	4.85	28.14	41.25	-	0.78	0.78	0.00
Asphalt On-Road Diesel	0.24	4.28	0.90	0.01	0.11	0.10	0.01
Asphalt Worker Trips	0.02	0.01	0.26	0.00	0.01	0.00	0.01
Maximum lbs/day	20.65	121.06	164.95	0.01	4.76	4.41	0.35
Max lbs/day all phases	20.65	121.06	164.95	0.01	4.76	4.41	0.35

Phase 1 - Demolition Assumptions: Phase Turned OFF

Phase 2 - Site Grading Assumptions  
 Start Month/Year for Phase 2: Jun '07  
 Phase 2 Duration: 4 months  
 On-Road Truck Travel (VMT): 0

Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
11	Crawler Tractors	143	0.575	8.0
2	Graders	174	0.575	8.0
7	Off Highway Trucks	417	0.490	8.0
4	Rubber Tired Loaders	165	0.465	8.0
2	Scrapers	313	0.660	8.0
4	Tractor/Loaders/Backhoes	79	0.465	8.0

Phase 3 - Building Construction Assumptions  
 Start Month/Year for Phase 3: Oct '07  
 Phase 3 Duration: 32 months  
 Start Month/Year for SubPhase Building: Oct '07  
 SubPhase Building Duration: 32 months

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Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
7	Other Equipment	190	0.620	8.0

SubPhase Architectural Coatings Turned OFF  
 Start Month/Year for SubPhase Asphalt: Apr '10  
 SubPhase Asphalt Duration: 1.6 months  
 Acres to be Paved: 14.1

Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
2	Pavers	132	0.590	8.0
2	Rollers	114	0.430	8.0

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AREA SOURCE EMISSION ESTIMATES (Winter Pounds per Day, Unmitigated)

Source	ROG	NOx	CO	SO2	PM10
Natural Gas	0.31	4.07	1.73	0	0.01
Hearth	238.38	7.89	435.88	1.03	64.97
Landscaping - No winter emissions					
Consumer Prdcts	20.55	-	-	-	-
Architectural Coatings	10.01	-	-	-	-
TOTALS(lbs/day,unmitigated)	269.25	11.96	437.61	1.03	64.98

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UNMITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
Single family housing	18.43	30.25	215.16	0.15	25.46
Cluster Single Family Uni	7.89	12.94	92.06	0.06	10.90
Apartments	5.00	8.21	58.38	0.04	6.91
Condo/townhouse general	7.20	11.82	84.06	0.06	9.95
City park	2.32	3.46	25.91	0.02	2.76
TOTAL EMISSIONS (lbs/day)	40.84	66.68	475.57	0.32	55.97

Includes correction for passby trips.  
Does not include double counting adjustment for internal trips.

OPERATIONAL (Vehicle) EMISSION ESTIMATES

Analysis Year: 2010 Temperature (F): 40 Season: Winter

EMFAC Version: EMFAC2002 (9/2002)

Summary of Land Uses:

Unit Type	Acreage	Trip Rate	No. Units	Total Trips
Single family housing	60.33	9.92 trips/dwelling unit	181.00	1,795.52
Cluster Single Family Uni	4.50	10.67 trips/dwelling unit	72.00	768.24
Apartments	1.47	8.70 trips/dwelling unit	56.00	487.20
Condo/townhouse general	6.94	6.32 trips/dwelling unit	111.00	701.52
City park		42.50 trips/acres	8.00	340.00
Sum of Total Trips				4,092.48
Total Vehicle Miles Traveled				36,917.67

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	54.70	1.10	98.70	0.20
Light Truck < 3,750 lbs	15.20	2.00	96.00	2.00
Light Truck 3,751- 5,750	16.20	1.20	98.10	0.70
Med Truck 5,751- 8,500	7.30	1.40	95.90	2.70
Lite-Heavy 8,501-10,000	1.10	0.00	81.80	18.20
Lite-Heavy 10,001-14,000	0.30	0.00	66.70	33.30
Med-Heavy 14,001-33,000	1.00	0.00	20.00	80.00
Heavy-Heavy 33,001-60,000	0.90	0.00	11.10	88.90
Line Haul > 60,000 lbs	0.00	0.00	0.00	100.00
Urban Bus	0.20	0.00	50.00	50.00
Motorcycle	1.60	68.80	31.20	0.00
School Bus	0.10	0.00	0.00	100.00
Motor Home	1.40	7.10	85.70	7.20

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip Speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			

% of Trips - Commercial (by land use)

City park	5.0	2.5	92.5
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URBEMIS 2002 For Windows 8.7.0

File Name: C:\Program Files\URBEMIS 2002 Version 8.7\Projects2k2\HighlandParkWithMit.urb  
Project Name: Highland Park  
Project Location: Mountain Counties and Rural Counties  
On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

DETAIL REPORT  
(Pounds/Day - Summer)

Construction Start Month and Year: June, 2007  
Construction Duration: 36  
Total Land Use Area to be Developed: 94.7 acres  
Maximum Acreage Disturbed Per Day: 86.9 acres  
Single Family Units: 181 Multi-Family Units: 239  
Retail/Office/Institutional/Industrial Square Footage: 0

CONSTRUCTION EMISSION ESTIMATES UNMITIGATED (lbs/day)

Source	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2007***							
Phase 1 - Demolition Emissions							
Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Phase 2 - Site Grading Emissions

Fugitive Dust	-	-	-	-	869.00	-	869.00
Off-Road Diesel	59.63	393.28	486.47	-	15.76	15.76	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.71	1.42	16.06	0.01	0.09	0.03	0.06
Maximum lbs/day	60.34	394.70	502.53	0.01	884.85	15.79	869.06

Phase 3 - Building Construction

Bldg Const Off-Road Diesel	13.53	103.26	100.15	-	4.60	4.60	0.00
Bldg Const Worker Trips	1.32	0.80	16.91	0.00	0.35	0.01	0.34
Arch Coatings Off-Gas	0.00	-	-	-	-	-	-
Arch Coatings Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Off-Gas	0.00	-	-	-	-	-	-
Asphalt Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
Asphalt On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	14.85	104.07	117.06	0.00	4.96	4.62	0.34

Max lbs/day all phases 60.34 394.70 502.53 0.01 884.85 15.79 869.06

\*\*\* 2008\*\*\*

Phase 1 - Demolition Emissions

Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Phase 2 - Site Grading Emissions

Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Phase 3 - Building Construction

Bldg Const Off-Road Diesel	13.53	98.26	103.81	-	4.20	4.20	0.00
Bldg Const Worker Trips	1.21	0.75	15.76	0.00	0.35	0.01	0.34
Arch Coatings Off-Gas	0.00	-	-	-	-	-	-
Arch Coatings Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Off-Gas	0.00	-	-	-	-	-	-
Asphalt Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
Asphalt On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	14.74	99.00	119.57	0.00	4.55	4.21	0.34

Max lbs/day all phases 14.74 99.00 119.57 0.00 4.55 4.21 0.34

\*\*\* 2009\*\*\*

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Phase 1 - Demolition Emissions

Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Phase 2 - Site Grading Emissions

Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Phase 3 - Building Construction

Bldg Const Off-Road Diesel	13.53	93.11	107.60	-	3.92	3.92	0.00
Bldg Const Worker Trips	1.10	0.68	14.54	0.00	0.35	0.01	0.34
Arch Coatings Off-Gas	0.00	-	-	-	-	-	-
Arch Coatings Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Off-Gas	0.00	-	-	-	-	-	-
Asphalt Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
Asphalt On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	14.63	93.80	122.13	0.00	4.28	3.94	0.34

Max lbs/day all phases 14.63 93.80 122.13 0.00 4.28 3.94 0.34

\*\*\* 2010\*\*\*

Phase 1 - Demolition Emissions

Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Phase 2 - Site Grading Emissions

Fugitive Dust	-	-	-	-	0.00	-	0.00
Off-Road Diesel	0.00	0.00	0.00	-	0.00	0.00	0.00
On-Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Maximum lbs/day	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Phase 3 - Building Construction

Bldg Const Off-Road Diesel	13.53	88.11	111.25	-	3.52	3.52	0.00
Bldg Const Worker Trips	1.00	0.63	13.38	0.00	0.35	0.01	0.34
Arch Coatings Off-Gas	0.00	-	-	-	-	-	-
Arch Coatings Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Asphalt Off-Gas	1.05	-	-	-	-	-	-
Asphalt Off-Road Diesel	4.85	28.14	41.25	-	0.78	0.78	0.00
Asphalt On-Road Diesel	0.24	4.28	0.90	0.01	0.11	0.10	0.01
Asphalt Worker Trips	0.02	0.01	0.26	0.00	0.01	0.00	0.01
Maximum lbs/day	20.65	121.06	164.95	0.01	4.76	4.41	0.35

Max lbs/day all phases 20.65 121.06 164.95 0.01 4.76 4.41 0.35

Phase 1 - Demolition Assumptions: Phase Turned OFF

Phase 2 - Site Grading Assumptions

Start Month/Year for Phase 2: Jun '07  
 Phase 2 Duration: 4 months  
 On-Road Truck Travel (VMT): 0  
 Off-Road Equipment

No.	Type	Horsepower	Load Factor	Hours/Day
11	Crawler Tractors	143	0.575	8.0
2	Graders	174	0.575	8.0
7	Off Highway Trucks	417	0.490	8.0
4	Rubber Tired Loaders	165	0.465	8.0
2	Scrapers	313	0.660	8.0
4	Tractor/Loaders/Backhoes	79	0.465	8.0

Phase 3 - Building Construction Assumptions

Start Month/Year for Phase 3: Oct '07  
 Phase 3 Duration: 32 months  
 Start Month/Year for SubPhase Building: Oct '07  
 SubPhase Building Duration: 32 months

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No.	Type	Horsepower	Load Factor	Hours/Day
7	Other Equipment	190	0.620	8.0

SubPhase Architectural Coatings Turned OFF  
 Start Month/Year for SubPhase Asphalt: Apr '10  
 SubPhase Asphalt Duration: 1.6 months  
 Acres to be Paved: 14.1

No.	Type	Horsepower	Load Factor	Hours/Day
2	Pavers	132	0.590	8.0
2	Rollers	114	0.430	8.0

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AREA SOURCE EMISSION ESTIMATES (Summer Pounds per Day, Unmitigated)

Source	ROG	NOx	CO	SO2	PM10
Natural Gas	0.31	4.07	1.73	0	0.01
Hearth - No summer emissions					

Landscaping	1.05	0.13	8.04	0.04	0.02
Consumer Prdcts	20.55	-	-	-	-
Architectural Coatings	10.01	-	-	-	-
TOTALS(lbs/day,unmitigated)	31.92	4.20	9.78	0.04	0.03

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UNMITIGATED OPERATIONAL EMISSIONS

	ROG	NOx	CO	SO2	PM10
Single family housing	14.34	25.28	181.89	0.14	25.46
Cluster Single Family Uni	6.13	10.82	77.82	0.06	10.90
Apartments	3.90	6.86	49.35	0.04	6.91
Condo/townhouse general	5.66	9.88	71.07	0.06	9.95
City park	1.83	2.90	21.05	0.02	2.76
TOTAL EMISSIONS (lbs/day)	31.86	55.74	401.18	0.32	55.97

Includes correction for passby trips.  
Does not include double counting adjustment for internal trips.

OPERATIONAL (Vehicle) EMISSION ESTIMATES

Analysis Year: 2010 Temperature (F): 60 Season: Summer

EMFAC Version: EMFAC2002 (9/2002)

Summary of Land Uses:

Unit Type	Acreage	Trip Rate	No. Units	Total Trips
Single family housing	60.33	9.92 trips/dwelling unit	181.00	1,795.52
Cluster Single Family Uni	4.50	10.67 trips/dwelling unit	72.00	768.24
Apartments	1.47	8.70 trips/dwelling unit	56.00	487.20
Condo/townhouse general	6.94	6.32 trips/dwelling unit	111.00	701.52
City park		42.50 trips/acres	8.00	340.00
Sum of Total Trips				4,092.48
Total Vehicle Miles Traveled				36,917.67

Vehicle Assumptions:

Fleet Mix:

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	54.70	1.10	98.70	0.20
Light Truck < 3,750 lbs	15.20	2.00	96.00	2.00
Light Truck 3,751- 5,750	16.20	1.20	98.10	0.70
Med Truck 5,751- 8,500	7.30	1.40	95.90	2.70
Lite-Heavy 8,501-10,000	1.10	0.00	81.80	18.20
Lite-Heavy 10,001-14,000	0.30	0.00	66.70	33.30
Med-Heavy 14,001-33,000	1.00	0.00	20.00	80.00
Heavy-Heavy 33,001-60,000	0.90	0.00	11.10	88.90
Line Haul > 60,000 lbs	0.00	0.00	0.00	100.00
Urban Bus	0.20	0.00	50.00	50.00
Motorcycle	1.60	68.80	31.20	0.00
School Bus	0.10	0.00	0.00	100.00
Motor Home	1.40	7.10	85.70	7.20

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip Speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
City park				5.0	2.5	92.5

File Name: C:\Program Files\URBEMIS 2002 Version 8.7\Projects2k2\HighlandParkWithMit.urb  
 Project Name: Highland Park  
 Project Location: Mountain Counties and Rural Counties  
 On-Road Motor Vehicle Emissions Based on EMFAC2002 version 2.2

SUMMARY REPORT  
 (Pounds/Day - Summer)

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 TOTAL	PM10 EXHAUST	PM10 DUST
*** 2007 ***							
TOTALS (lbs/day,mitigated <sup>1</sup> )	25.00	163.52	208.28	0.00	875.56	6.54	869.02
TOTALS (lbs/day, mitigated <sup>2</sup> )	25.00	130.94	208.28	0.00	113.22	4.62	108.60
*** 2008 ***							
TOTALS (lbs/day,mitigated <sup>1</sup> )	14.74	99.00	119.57	0.00	4.55	4.21	0.34
TOTALS (lbs/day, mitigated <sup>2</sup> )	14.74	99.00	119.57	0.00	4.55	4.21	0.34
*** 2009 ***							
TOTALS (lbs/day,mitigated <sup>1</sup> )	14.63	93.80	122.13	0.00	4.28	3.94	0.34
TOTALS (lbs/day, mitigated <sup>2</sup> )	14.63	93.80	122.13	0.00	4.28	3.94	0.34
*** 2010 ***							
TOTALS (lbs/day,mitigated <sup>1</sup> )	20.65	121.06	164.95	0.01	4.76	4.41	0.35
TOTALS (lbs/day, mitigated <sup>2</sup> )	20.65	121.06	164.95	0.01	4.76	4.41	0.35

<sup>1</sup> Maximum area of active disturbance shall be limited to 9 acres/day, or less.

<sup>2</sup> Above plus implementation of emission reduction plan and water actively disturbed areas 3 times/day.