

CHARCOT AVENUE EXTENSION PROJECT AIR QUALITY AND GREENHOUSE GAS EMISSIONS ASSESSMENT

San José, California

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Introduction

The City of San José proposes to construct a 2-lane extension of Charcot Avenue from Paragon Drive on the west to Oakland Road on the east, which would be approximately 0.6 miles. The extension includes the construction of an overcrossing across O'Toole Avenue and Interstate 880 (I-880). The extension would also construct bicycle/pedestrian facilities on Charcot Avenue, including sidewalks and Class IV bikeways¹, between Paragon Drive and Oakland Road.

Project Description

Charcot Avenue currently runs between its intersections with Orchard Parkway to the west and O'Toole Avenue at its eastern end on the west side of I-880. The proposed project would result in the extension of Charcot Avenue from its current termini west of I-880 to Oakland Road east of I-880. The proposed Charcot Avenue extension will provide an additional east/west connection across I-880 between Montague Expressway and Brokaw Road. The project area includes Charcot Avenue from its intersection with Paragon Drive on the west side of I-880 to its future intersection with Oakland Road on the east side of I-880. The extension is proposed to consist of a two-lane roadway, one travel lane in each direction with sidewalks and bike lanes on both sides of the roadway. The planned extension also includes the following roadway adjustments:

1. The existing Charcot Avenue/O'Toole Avenue intersection will be eliminated. Access to O'Toole Avenue from Charcot Avenue will be maintained via a new slip ramp along the south side of Charcot Avenue. Access to westbound Charcot Avenue from O'Toole Avenue will not be provided.
2. A new traffic signal will be installed at the existing unsignalized Charcot Avenue and Paragon Drive T-intersection.
3. Access to adjacent properties along Charcot Avenue between Paragon Drive and Silkwood Lane will not be provided.
4. The extension will follow the current alignment of Silkwood Lane between Oakland Road and Silkwood Lane.
5. A new pedestrian only signal or High-Intensity Activated crosswalk (HAWK) beacon will be installed along Charcot Avenue at Silkwood Lane. A median will be constructed along Charcot Avenue at Silkwood Lane to restrict turn-movements.
6. The existing unsignalized intersection of Silkwood Lane and Oakland Road will be replaced by a new signalized intersection. The proposed lane configurations at the intersection consist of one left-turn and one shared left-right turn lane on Charcot Avenue and two northbound left-turn lanes and six through lanes on Oakland Road

¹ A Class IV Bikeway, which is also known as a protected bike lane or separated bikeway, is one that is physically separated from the vehicle travel lane by more than the white stripe. This can entail flexible bollards, permanent barriers, and/or vertical separation.

Purpose of this Report

The purpose of this report is to address air quality and air quality community risk impacts associated with the proposed extension of Charcot Avenue. There are residences located to the north and east of the project and the Orchard School to the south.

The air quality assessment predicts construction and operational criteria pollutant emissions. Community risk impacts could occur due to temporary construction emissions affecting nearby sensitive receptors and the operation of the new roadway. This analysis addresses those issues following the guidance provided by the Bay Area Air Quality Management District (BAAQMD).

Air Quality Setting

The project is located in the northern portion of Santa Clara County, which is in the San Francisco Bay Area Air Basin. Ambient air quality standards have been established at both the State and federal level. The Bay Area meets all ambient air quality standards with the exception of ground-level ozone, respirable particulate matter (PM₁₀), and fine particulate matter (PM_{2.5}).

Air Pollutants

Ozone

Ozone is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG) and oxides of nitrogen (NO_x). The main sources of ROG and NO_x, often referred to as ozone precursors, are combustion processes (including combustion in motor vehicle engines) and the evaporation of solvents, paints, and fuels. In the Bay Area, automobiles are the single largest source of ozone precursors. Ozone is referred to as a regional air pollutant because its precursors are transported and diffused by wind concurrently with ozone production through the photochemical reaction process. Ozone causes eye irritation, airway constriction, shortness of breath, and can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema.

Carbon Monoxide

Carbon monoxide (CO) is an odorless, colorless gas usually formed as the result of the incomplete combustion of fuels. The single largest source of CO is motor vehicles. While CO transport is limited, it disperses with distance from the source under normal meteorological conditions. However, under certain extreme meteorological conditions, CO concentrations near congested roadways or intersections may reach unhealthful levels that adversely affect local sensitive receptors (e.g., residents, schoolchildren, the elderly, hospital patients, etc.). Typically, high CO concentrations are associated with roadways or intersections operating at unacceptable levels of service (LOS) or with extremely high traffic volumes. Exposure to high concentrations of CO reduces the oxygen-carrying capacity of the blood and can cause headaches, nausea, dizziness, fatigue, impair central nervous system function, and induce angina (chest pain) in persons with serious heart disease. Very high levels of CO can be fatal.

Nitrogen Dioxide

NO₂ is a reddish-brown gas that is a byproduct of combustion processes. Automobiles and industrial operations are the main sources of NO₂. Aside from its contribution to ozone formation, NO₂ also contribute to other pollution problems, including a high concentration of fine particulate matter, poor visibility, and acid deposition. NO₂ may be visible as a coloring component on high pollution days, especially in conjunction with high ozone levels. NO₂ decreases lung function and may reduce resistance to infection. On January 22, 2010 the EPA strengthened the health-based NAAQS for NO₂.

Sulfur Dioxide

Sulfur dioxide (SO₂) is a colorless, irritating gas formed primarily from incomplete combustion of fuels containing sulfur. Industrial facilities also contribute to gaseous SO₂ levels in the region. SO₂ irritates the respiratory tract, can injure lung tissue when combined with fine particulate matter, and reduces visibility and the level of sunlight.

Particulate Matter

Particulate matter is the term used for a mixture of solid particles and liquid droplets found in the air. Coarse particles are those that are larger than 2.5 microns but smaller than 10 microns (PM₁₀). PM_{2.5} refers to fine suspended particulate matter with an aerodynamic diameter of 2.5 microns or less that is not readily filtered out by the lungs. Nitrates, sulfates, dust, and combustion particulates are major components of PM₁₀ and PM_{2.5}. These small particles can be directly emitted into the atmosphere as by-products of fuel combustion, through abrasion, such as tire or brake lining wear, or through fugitive dust (wind or mechanical erosion of soil). They can also be formed in the atmosphere through chemical reactions. Particulates may transport carcinogens and other toxic compounds that adhere to the particle surfaces and can enter the human body through the lungs.

Lead

Lead is a metal found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been mobile and industrial sources. As a result of the phase-out of leaded gasoline, metal processing is currently the primary source of lead emissions. The highest levels of lead in air are generally found near lead smelters. Other stationary sources are waste incinerators, utilities, and lead-acid battery manufactures.

Twenty years ago, mobile sources were the main contributor to ambient lead concentrations in the air. In the early 1970s, the U.S. EPA established national regulations to gradually reduce the lead content in gasoline. In 1975, unleaded gasoline was introduced for motor vehicles equipped with catalytic converters. The EPA banned the use of leaded gasoline in highway vehicles in December 1995. As a result of the EPA's regulatory efforts to remove lead from gasoline, emissions of lead from the transportation sector and levels of lead in the air decreased dramatically.

Toxic Air Contaminants (TACs)

In addition to the criteria pollutants discussed above, Toxic Air Contaminants (TACs) are another group of pollutants of concern. TACs are injurious in small quantities and are regulated by the EPA and the CARB. Some examples of TACs include: benzene, butadiene, formaldehyde, and hydrogen sulfide. The identification, regulation, and monitoring of TACs is relatively recent compared to that for criteria pollutants.

High volume freeways, stationary diesel engines, and facilities attracting heavy and constant diesel vehicle traffic (distribution centers, truck stops) were identified as posing the highest risk to adjacent receptors. Other facilities associated with increased risk include warehouse distribution centers, large retail or industrial facilities, high volume transit centers, or schools with a high volume of bus traffic. Health risks from TACs are a function of both concentration and duration of exposure.

Sensitive Receptors

Some groups of people are more affected by air pollution than others. The State has identified the following people who are most likely to be affected by air pollution: children under 16, the elderly over 65, athletes, and people with cardiovascular and chronic respiratory diseases. These groups are classified as sensitive receptors. Locations that may contain a high concentration of these sensitive population groups include residential areas, hospitals, daycare facilities, elder care facilities, and elementary schools.

Health effects of criteria pollutants and their potential sources are described below and summarized in Table 1.

Regulatory Setting

The U.S. Environmental Protection Agency (U.S. EPA) is responsible for enforcing the federal Clean Air Act and the 1990 amendments to it, as well as the national ambient air quality standards (federal standards) that the U.S. EPA establishes. These standards identify levels of air quality for six criteria pollutants, which are considered the maximum levels of ambient air pollutants considered safe, with an adequate margin of safety, to protect public health and welfare. The six criteria pollutants are ozone (O₃), carbon dioxide (CO₂), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), respirable particulate matter with an aerodynamic diameter of 10 micrometers (PM₁₀), fine particulate matter with an aerodynamic diameter of 2.5 micrometers (PM_{2.5}), and lead (Pb). The U.S. EPA also has regulatory and enforcement jurisdiction over emission sources beyond State waters (outer continental shelf) and sources that are under the exclusive authority of the federal government, such as aircraft, train locomotives, and interstate trucking. As part of its enforcement responsibilities, the U.S. EPA requires each State with nonattainment areas (i.e., areas that do not meet national ambient air quality standards) to prepare and submit a State Implementation Plan (SIP) that demonstrates the means to attain the federal standards. The SIP must integrate federal, State, and local plan components and regulations to identify specific measures to reduce pollution in nonattainment areas, using a combination of performance standards and market-based programs.

Table 1 Health Effects of Air Pollutants

Pollutants	Sources	Primary Effects
Carbon Monoxide (CO)	• Incomplete combustion of fuels and other carbon-containing substances, such as motor exhaust. • Natural events, such as decomposition of organic matter.	• Reduced tolerance for exercise. • Impairment of mental function. • Impairment of fetal development. • Death at high levels of exposure. • Aggravation of some heart diseases (angina).
Nitrogen Dioxide (NO ₂)	• Motor vehicle exhaust. • High temperature stationary combustion. • Atmospheric reactions.	• Aggravation of respiratory illness. • Reduced visibility. • Reduced plant growth. • Formation of acid rain.
Ozone (O ₃)	• Atmospheric reaction of organic gases with nitrogen oxides in sunlight.	• Aggravation of respiratory and cardiovascular diseases. • Irritation of eyes. • Impairment of cardiopulmonary function. • Plant leaf injury.
Lead (Pb)	• Contaminated soil.	• Impairment of blood functions and nerve construction. • Behavioral and hearing problems in children.
Suspended Particulate Matter (PM _{2.5} and PM ₁₀)	• Stationary combustion of solid fuels. • Construction activities. • Industrial processes. • Atmospheric chemical reactions.	• Reduced lung function. • Aggravation of the effects of gaseous pollutants. • Aggravation of respiratory and cardiorespiratory diseases. • Increased cough and chest discomfort. • Soiling. • Reduced visibility.
Sulfur Dioxide (SO ₂)	• Combustion of sulfur-containing fossil fuels. • Smelting of sulfur-bearing metal ores. • Industrial processes.	• Aggravation of respiratory diseases (asthma, emphysema). • Reduced lung function. • Irritation of eyes. • Reduced visibility. • Plant injury. • Deterioration of metals, textiles, leather, finishes, coatings, etc.
Toxic Air Contaminants	• Cars and trucks, especially diesels. • Industrial sources such as chrome platers. • Neighborhood businesses such as dry cleaners and service stations. • Building materials and product.	• Cancer. • Chronic eye, lung, or skin irritation. • Neurological and reproductive disorders.

Source: CARB, 2008.

The California Air Resources Board (CARB), a department of the California EPA, oversees air quality planning and control throughout California. It is primarily responsible for ensuring implementation of the 1989 amendments to the California Clean Air Act (CCAA), responding to the federal Clean Air Act Amendment requirements, and regulating emissions from motor vehicles and consumer products within the state. CARB has established emission standards for vehicles sold in California and for various types of equipment available commercially. It also sets fuel specifications to further reduce vehicular emissions and develops airborne toxic control measures to reduce TACs identified under CARB regulations.

Both the U.S. EPA and CARB established ambient air quality standards for common air pollutants. These ambient air quality standards are prescribed levels of pollutants that represent safe levels that avoid specific adverse health effects associated with each pollutant. The ambient air quality standards cover what are called “criteria” pollutants because the health and other effects of each pollutant are described in criteria documents. The federal and State ambient standards were developed independently with differing purposes and methods, although both processes attempted to avoid health-related effects. As a result, federal and State standards differ in some cases. In general, California standards are more stringent. This is particularly true for ozone and PM₁₀. The BAAQMD is the regional agency tasked with managing air quality in the region. At the State level, the CARB oversees regional air district activities and regulates air quality at the State level. The BAAQMD has published the California Environmental Quality Act (CEQA) Air Quality Guidelines that are used in this assessment to evaluate air quality impacts of projects.²

Air Quality Attainment Status

Air quality conditions in the Bay Area are compared against ambient air quality standards set at the Federal level (i.e., NAAQS) and at the State level (CAAQS). The attainment status is classified for each pollutant.

Under the NAAQS, the Bay Area is classified as nonattainment for ozone and PM_{2.5}. Note that in 2013, EPA issued a final rule to determine that the Bay Area attains the 24-hour PM_{2.5} national standard. Despite this EPA action, the Bay Area continues to be designated as “nonattainment” for the 24-hour PM_{2.5} NAAQS standard until such time as BAAQMD submits a “redesignation request” and a “maintenance plan” to EPA, and EPA approves the proposed redesignation. For the pollutants NO₂, CO and SO₂, the area is designated as attainment. Note that the region is considered a “maintenance” area for CO since at one time the region was considered “nonattainment.” While monitoring data shows the region meets the PM₁₀ NAAQS, the area is technically designated “unclassified.”

At the State level, the area is considered nonattainment for ozone, PM_{2.5} and PM₁₀ and considered “attainment” for all other criteria air pollutants.

² Bay Area Air Quality Management District. 2017. BAAQMD CEQA Air Quality Guidelines. May.

Greenhouse Gas Emissions

This section provides a general discussion of global climate change and focuses on emissions from human activities that alter the chemical composition of the atmosphere. The discussion on global climate change and greenhouse gas (GHG) emissions is based in part upon the California Global Warming Solutions Act of 2006 (Assembly Bill (AB) 32) and research, information and analysis completed by the International Panel on Climate Change (IPCC), the U.S. EPA, and CARB.

Global climate change refers to changes in weather including temperatures, precipitation, and wind patterns. Global temperatures are modulated by naturally occurring and anthropogenic (generated by mankind) atmospheric gases such as carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (NO_x).³ These gases allow sunlight into the earth's atmosphere but prevent heat from radiating back out into outer space and escaping from the earth's atmosphere, thus altering the earth's energy balance. This phenomenon is known as the greenhouse effect.

Naturally occurring GHGs include water vapor,⁴ CO₂, CH₄, NO_x, and ozone (O₃). Several classes of halogenated substances that contain fluorine, chlorine, or bromine are also GHGs, but are for the most part solely a product of industrial activities.

Unlike emissions of criteria and toxic air pollutants, which have local or regional impacts, emissions of GHGs have a broader, global impact. Emissions of GHGs contributing to global climate change are attributable in large part to human activities associated with the transportation, industrial/manufacturing, utility, residential, commercial, and agricultural sectors.

Impacts to California from climate change include shifting precipitation patterns, increasing temperatures, increasing severity and duration of wildfires, earlier melting of snow pack and effects on habitats and biodiversity. Sea levels along the California coast have risen up to seven inches over the last century, and average annual temperatures have been increasing. These and other effects will likely intensify in the coming decades and significantly impact the State's public health, natural and manmade infrastructure, and ecosystems.⁵

Agencies at the international, national, state, and local levels are considering strategies to control emissions of gases that contribute to global warming. There is no comprehensive strategy that is being implemented on a global scale that addresses climate change; however, in California a multi-agency "Climate Action Team," has identified a range of strategies and the Air Resources Board,

³ 19 IPCC, 2007: Summary for Policymakers. In: Climate Change 2007: The Physical Science Bases. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor, and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. Available at: <<http://ipcc.ch/>>. Accessed March 25, 2013

⁴ Concentrations of water are highly variable in the atmosphere over time, with water occurring as vapor, cloud droplets and ice crystals. Changes in its concentration are also considered to be a result of climate feedbacks rather than a direct result of industrialization or other human activities. For this reason, water vapor is not discussed further as a greenhouse gas

⁵ State of California Energy Commission. 2009 California Climate Adaptation Strategy Discussion Draft. Frequently Asked Questions. August 3, 2009. <www.climatechange.ca.gov/adaptation/documents/2009-07-31_Discussion_Draft-Adaptation_FAQs.pdf>. Accessed March 25, 2013.

under AB 32, has approved the *Climate Change Scoping Plan* (Scoping Plan). AB 32 requires achievement by 2020 of a Statewide greenhouse gas emissions limit equivalent to 1990 emission levels, and the adoption of rules and regulations to achieve the maximum technologically feasible and cost-effective greenhouse gas emissions reductions. The CARB and other State agencies are currently working on regulations and other initiatives to implement the Scoping Plan. By 2050, the State plans to reduce emissions to 80 percent below 1990 levels.

In April 2015, Governor Brown signed Executive Order B-30-15 which extended the goals of AB 32, setting a greenhouse gas emissions target at 40 percent of 1990 levels by 2030. On September 8, 2016, Governor Brown signed SB 32, which legislatively established the GHG reduction target of 40 percent of 1990 levels by 2030. In November 2017, CARB issued *California's 2017 Climate Change Scoping Plan*. While the State is on track to exceed the AB 32 scoping plan 2020 targets, this plan is an update to reflect the enacted SB 32 reduction target.

The new Scoping Plan establishes a strategy that will reduce GHG emissions in California to meet the 2030 target (note that the AB 32 Scoping Plan only addressed 2020 targets and a long-term goal). Key features of this plan are:

- Cap and Trade program places a firm limit on 80 percent of the State's emissions;
- Achieving a 50-percent Renewable Portfolio Standard by 2030 (currently at about 29 percent statewide);
- Increase energy efficiency in existing buildings;
- Develop fuels with an 18-percent reduction in carbon intensity;
- Develop more high-density, transit-oriented housing;
- Develop walkable and bikable communities
- Greatly increase the number of electric vehicles on the road and reduce oil demand in half;
- Increase zero-emissions transit so that 100 percent of new buses are zero emissions;
- Reduce freight-related emissions by transitioning to zero emissions where feasible and near-zero emissions with renewable fuels everywhere else; and
- Reduce "super pollutants" by reducing methane and hydrofluorocarbons or HFCs by 40 percent.

In the updated Scoping Plan, CARB recommends statewide targets of no more than 6 metric tons CO_{2e} per capita (statewide) by 2030 and no more than 2 metric tons CO_{2e} per capita by 2050. The statewide per capita targets account for all emissions sectors in the State, statewide population forecasts, and the statewide reductions necessary to achieve the 2030 statewide target under SB 32 and the longer-term State emissions reduction goal of 80 percent below 1990 levels by 2050.

Plan Bay Area

Senate Bill 375(SB 375) requires the Bay Area regional planning agencies to include a Sustainable Communities Strategy (SCS) in their regional transportation plan (RTP) updates to describe how the GHG emissions reductions set by CARB would be met through land-use and transportation planning. In 2010, the Metropolitan Transportation Commission (MTC) approved a set of "*Bay Area Principles for Establishing Regional Greenhouse Gas Reduction Targets*" (Resolution 3970) that proposed per-capita GHG emission reductions of 7 percent from 1990 by 2020 and 15 percent

by 2035. Subsequently, MTC, along with the Association of Bay Area Governments (ABAG), developed the SCS plans to meet state targets for reducing greenhouse gas emissions from light-duty vehicles. Plan Bay Area 2040 is the update to this plan, which includes implementation of transportation projects and Climate Initiatives Program that, together, would result in emissions from light-duty vehicles that meet the region's GHG reduction targets, per SB 375⁶.

Bay Area 2017 Clean Air Plan

The Bay Area 2017 Clean Air Plan (CAP) is a multi-pollutant plan prepared by BAAQMD that addresses GHG emissions along with other air emissions in the San Francisco Bay Area Air Basin. One of the key objectives in the CAP is climate protection. The 2017 CAP includes emission control measures in five categories: Stationary Source Measures, Mobile Source Measures, Transportation Control Measures, Land Use and Local Impact Measures, and Energy and Climate Measures. Consistency of a project with current control measures is one measure of its consistency with the CAP. The current CAP also includes performance objectives, consistent with the State's climate protection goals under SB 32, designed to reduce emissions of GHGs to 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050.

⁶ MTC and ABAG. 2017. *Plan Bay Area 2040 Draft EIR SCH# 2016052041*. April.

Significance Thresholds

In June 2010, BAAQMD adopted thresholds of significance to assist in the review of projects under CEQA. These thresholds were designed to establish the level at which BAAQMD believed air pollution emissions would cause significant environmental impacts under CEQA and were posted on BAAQMD's website and included in the Air District's updated CEQA Guidelines (updated 2011 and recently in May 2017). The significance thresholds identified by BAAQMD and used in this analysis are summarized in Table 2.

Table 2. Air Quality Significance Thresholds

Criteria Air Pollutant	Construction Thresholds	Operational Thresholds	
	Average Daily Emissions (lbs./day)	Average Daily Emissions (lbs./day)	Annual Average Emissions (tons/year)
ROG	54	54	10
NO _x	54	54	10
PM ₁₀	82 (Exhaust)	82	15
PM _{2.5}	54 (Exhaust)	54	10
CO	Not Applicable	9.0 ppm (8-hour average) or 20.0 ppm (1-hour average)	
Fugitive Dust	Construction Dust Ordinance or other Best Management Practices	Not Applicable	
Health Risks and Hazards	Single Sources Within 1,000-foot Zone of Influence	Combined Sources (Cumulative from all sources within 1,000-foot zone of influence)	
Excess Cancer Risk	>10.0 per one million	>100.0 per one million	
Hazard Index	>1.0	>10.0	
Incremental annual PM _{2.5}	>0.3 µg/m ³	>0.8 µg/m ³	
Greenhouse Gas Emissions			
GHG Annual Emissions	Compliance with a Qualified GHG Reduction Strategy OR 1,100 metric tons or 4.6 metric tons per capita		
Note: ROG = reactive organic gases, NO _x = nitrogen oxides, PM ₁₀ = coarse particulate matter or particulates with an aerodynamic diameter of 10 micrometers (µm) or less, PM _{2.5} = fine particulate matter or particulates with an aerodynamic diameter of 2.5µm or less. GHG = greenhouse gases.			
*BAAQMD does not have a recommended post-2020 GHG threshold.			

Impacts and Mitigation Measures

Impact 1: Conflict with or obstruct implementation of the applicable air quality plan? ***Less-than-significant.***

The most recent Clean Air Plan is the *2017 Bay Area Clean Air Plan* that was adopted by BAAQMD on April 19, 2017. The proposed project would not conflict with the latest Clean Air planning efforts since the project would have emissions below the BAAQMD criteria pollutant thresholds (see Impact 2). It is important to note that the extension of Charcot, as proposed, is included as part of the adopted *Envision San José 2040 General Plan* roadway network and planned roadway network of the North San Jose Area Development Policy.

Impact 2: 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? *Less-than-significant with construction-period mitigation measures.*

The Bay Area is considered a non-attainment area for ground-level ozone and PM_{2.5} under both the Federal Clean Air Act and the California Clean Air Act. The area is also considered non-attainment for PM₁₀ under the California Clean Air Act, but not the federal act. The area has attained both State and federal ambient air quality standards for carbon monoxide. As part of an effort to attain and maintain ambient air quality standards for ozone and PM₁₀, the BAAQMD has established thresholds of significance for these air pollutants and their precursors. These thresholds are for ozone precursor pollutants (ROG and NO_x), PM₁₀, and PM_{2.5} and apply to both construction period and operational period impacts.

Road Construction and Operational Modeling

Emissions of air pollutants that could affect both regional and local air quality were addressed by modeling emissions and comparing them to the significance thresholds identified in Table 2. This included emissions for both construction and operational periods.

Construction Period Emissions

Average daily construction exhaust emissions were predicted using the Roadway Construction Emissions Model (version 8.1.0). Inputs to the model included the construction year, total expected duration and proposed equipment usage. Other model inputs such as soil import and export, concrete truck trips, and asphalt truck trips were input to the model. The model predicts emissions of ozone precursor pollutants (i.e., ROG and NO_x) and particulate matter (i.e., PM₁₀ and PM_{2.5}). The model also computes emissions of CO_{2e}. The provided project schedule and equipment usage assumptions are that the project would be built out over a period of approximately 10 months beginning in 2019, or an estimated 220 construction workdays (based on an average of 22 workdays per month). Average daily emissions were computed by dividing the total construction emissions by the number of construction days. Table 3 shows average daily construction emissions of ROG, NO_x, PM₁₀ exhaust, and PM_{2.5} exhaust during construction of the project. As indicated in Table 3, predicted project emissions would not exceed the BAAQMD significance thresholds.

Attachment 1 includes the construction assumptions (schedule and equipment) and Roadway Construction Emissions Model output for construction emissions.

Construction activities, particularly during site preparation and grading, would temporarily generate fugitive dust in the form of PM₁₀ and PM_{2.5}. Sources of fugitive dust would include disturbed soils at the construction site and trucks carrying uncovered loads of soils. Unless properly controlled, vehicles leaving the site would deposit mud on local streets, which could be an additional source of airborne dust after it dries. The BAAQMD CEQA Air Quality Guidelines consider these impacts to be less-than-significant if best management practices are implemented to reduce these emissions. *Mitigation Measure AQ-1 would implement BAAQMD-recommended best management practices.*

Table 3. Construction Period Emissions

Scenario	ROG	NO _x	PM ₁₀ Exhaust	PM _{2.5} Exhaust
Construction emissions (tons)	0.2 tons	4.88 tons	0.18 tons	0.14 tons
Average daily emissions (pounds/day) ¹	2.4 lbs./day	44.3 lbs./day	1.6 lbs./day	1.2 lbs./day
BAAQMD Thresholds (pounds per day)	54 lbs.	54 lbs.	82 lbs.	54 lbs.
Exceed Threshold?	No	No	No	No
Notes: ¹ Assumes 220 workdays				

Mitigation Measure AQ-1: Include basic measures to control dust and exhaust during construction.

During any construction period ground disturbance, the applicant shall ensure that the project contractor implement measures to control dust and exhaust. Implementation of the measures recommended by BAAQMD and listed below would reduce the air quality impacts associated with grading and new construction to a less-than-significant level. The contractor shall implement the following best management practices that are required of all projects:

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
4. All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph).
5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne

toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.

7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
8. Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

Effectiveness of Mitigation Measure AQ-1

Implementation of Mitigation Measure AQ-1 would be consistent with recommendations in the BAAQMD CEQA Air Quality Guidelines for controlling fugitive dust emissions that contribute to localized elevated concentrations of PM₁₀ and PM_{2.5}. The impact would be reduced to less than significant.

Project Operational Period Emissions

Operational air pollutant emissions from the project would be generated by changes in traffic patterns and traffic conditions (e.g., speed). Predicted traffic conditions along with vehicle emission rates were combined to predict the daily change in traffic emissions.

Traffic Modeling

Hexagon Transportation Consultants used the City of San Jose's travel demand forecasting (TDF) model prepared as part of the Envision San Jose 2040 General Plan to predict the effects of the proposed Charcot Avenue extension on the roadway system traffic conditions. The TDF model includes all major transportation infrastructure identified in the Envision San Jose 2040 Land Use/Transportation Diagram, including planned infrastructure that is not yet built and/or funded. The TDF model has the ability to project the diversion of traffic and change in travel patterns due to roadway network changes such as the proposed project. In addition to providing traffic volume projections, the model also provides information on vehicle-miles and vehicle-hours of travel as well as projected average speeds for the roadway network. The General Plan TDF model has been updated to reflect land use development and roadway projects that have been completed since the completion of the General Plan EIR.

The TDF model predicted the daily vehicle miles travelled (VMT), vehicle hours travelled (VHT), and computed travel speed for roadways in the study area without and with the Charcot extension.

Emissions Modeling

The CT-EMFAC2014 Version 6.0 model was used to predict vehicle emission rates. CT-EMFAC2014 models on-road vehicle emissions for criteria pollutants, mobile source air toxics

(MSATs), and carbon dioxide (CO₂). The tool's underlying data are based on CARB's EMFAC2014 on-road emissions model and CARB-supplied/EPA-supplied MSAT speciation factors. Inputs to the model include region (i.e., Santa Clara County), default traffic mix assigned by CT-EMFAC2014 for that county, year of analysis and season.

Emissions associated with vehicle travel depend on the year of analysis because emission control technology requirements are phased-in over time. Therefore, the earlier the year analyzed in the model, the higher the emission rates utilized by CT-EMFAC. This analysis was based on the existing year (using 2020 emission rates) the opening year (2025) and the horizon year (2040). Emission rates were predicted for annual conditions.

Emission processes modeled include running exhaust for all pollutants, running losses for organic compounds (e.g., ROG), tire wear and brake wear for PM₁₀ and PM_{2.5}. CT-EMFAC2014 provides vehicles emissions for speeds in 5 mph increments, so emissions rates were interpolated to account for the predicted average speed.

Project Air Pollutant Emissions

The predicted daily traffic conditions were combined with CT-EMFAC2014 emissions factors to predict emission in pounds per day. Table 4a and 4b report the predicted air pollutant emission in terms of average daily emissions for both the No-Project and Project scenarios for the three analysis years (i.e., existing or 2020, 2025 and 2040). Table 4a shows the change in emissions in the area that would result from changes to in traffic patterns in the area caused by the project. *Attachment 2* to this report includes the traffic and CT-EMFAC model output files for the proposed project emission factors and modeling calculations.

The BAAQMD CEQA Air Quality Guidelines provide recommended emission thresholds for projects. These are intended to be applied to land-use type projects but provide an informative comparison in determining the magnitude of roadway project emissions and these operational emissions thresholds (contained in Table 2) are used to judge the significance of the project.

Table 4a. Area-Wide Daily Project Operational Emissions in pounds per day

Scenario	ROG	NO _x	CO	PM10 Total*	PM2.5 Total*
Existing	752	2,249	8,505	1,660	377
Existing Plus Project	728	2,209	8,349	1,655	375
Increase	-25	-40	-156	-5	-2
2025 No Project	1,023	2,234	8,935	2,026	506
2025 Project	1,002	2,172	8,851	2,024	505
2025 Project Increase	-21	-61	-84	-2	-1
2040 No Project	1,102	3,365	8,065	2,553	567
2040 Project	1,088	3,302	8,030	2,558	568
2040 Project Increase	-14	-63	-35	+5	+1
BAAQMD Thresholds (pounds per day)	54 lbs.	54 lbs.	--	82 lbs.	54 lbs.
Exceed Threshold?	No	No	--	No	No

*Includes entrained roadway dust

Impact 3: Expose sensitive receptors to substantial pollutant concentrations? *Less-than-significant with construction-period mitigation measures.*

Project impacts related to increased community risk can occur by introducing a source of TACs with the potential to adversely affect existing sensitive receptors in the project vicinity. The BAAQMD recommends using a 1,000-foot screening radius around a project site for purposes of identifying community health risk from siting a new sensitive receptor or a new source of TACs. There are thresholds that address both the impact of single and cumulative TAC sources upon sensitive receptors (see Table 2). Construction activity would generate dust and equipment exhaust on a temporary basis that could affect nearby sensitive receptors.

Sensitive receptors potentially affected by the proposed road construction include residences adjacent to or near the proposed new road and the Orchard School (Kindergarten through 8th grade) adjacent of the new road construction area. This community risk assessment models concentrations of DPM and PM_{2.5}, which are then used to evaluate potential cancer risk, non-cancer health hazards, and annual concentrations of PM_{2.5}. *Attachment 3* includes the community risk impact evaluation methodology.

Project Construction Activity

Project Impacts

Construction equipment and associated heavy-duty truck traffic for the proposed road construction would generate diesel exhaust, which is a known TAC.⁷ Construction exhaust emissions may pose community risks for sensitive receptors in the vicinity of the construction activities. The primary community risk impact issues associated with construction emissions are cancer risk and exposure to PM_{2.5}. Diesel exhaust poses both a potential health and nuisance impact to nearby receptors.

⁷ DPM is identified by California as a toxic air contaminant due to the potential to cause cancer.

A community risk assessment of the project construction activities was conducted that evaluated potential health effects on sensitive receptors from construction emissions of DPM and PM_{2.5}. Sensitive receptors potentially affected by the proposed road construction include residences adjacent to or near the proposed new road and the Orchard School (Kindergarten through 8th grade) on Fox Lane, which is the school adjacent to the new road construction area. A dispersion model was used to predict the off-site DPM concentrations resulting from project construction so that increased cancer risks could be predicted.

Construction Period Emissions

Construction period emissions were computed using the Roadway Construction Emissions Model along with projected construction activity, as described above. A one-mile trip length was used to calculate TAC concentrations from on- and near-site vehicle travel. The Roadway Construction Emissions Model provided total annual PM₁₀ exhaust emissions (assumed to be DPM) from the off-road construction equipment and worker, vendor and hauling trucks used for the proposed road construction (both the bridge and roadwork) of 0.1286 tons (257 pounds) over the construction period. Fugitive dust PM_{2.5} emissions were also computed and included in this analysis. The model predicts emissions of 0.4464 tons (893 pounds) of fugitive PM_{2.5} over the construction period. These emissions were used in modeling DPM and PM_{2.5} concentrations at residences and sensitive receptors near the construction areas.

Dispersion Modeling

The U.S. EPA AERMOD dispersion model was used to predict DPM and PM_{2.5} concentrations at residential and sensitive receptor locations near the project construction areas. The AERMOD dispersion model is a BAAQMD-recommended model for use in modeling these types of emission activities for CEQA projects.⁸ Emission sources for the roadway construction were grouped into two categories, exhaust emissions of DPM and fugitive PM_{2.5} dust emissions.

The AERMOD modeling utilized area sources to represent all construction activities. For modeling both DPM and fugitive PM_{2.5} dust emissions three area sources were used for modeling the road construction on either side of the proposed bridge, and for the bridge work. For exhaust emissions from construction equipment, an emission release height of 6 meters (20 feet) was used for the area sources. The elevated source height reflects the height of the equipment exhaust pipes plus an additional distance for the height of the exhaust plume above the exhaust pipes to account for plume rise of the exhaust gases. For modeling fugitive PM_{2.5} emissions, a near-ground level release height of 2 meters (6.6 feet) was used for the area sources. Construction emissions were modeled as occurring daily between 7 a.m. and 4 p.m., when the majority of the construction activity involving equipment usage would occur.

The modeling used a five-year data set (2006 to 2010) of hourly meteorological data from the San Jose International Airport that was prepared for use with the AERMOD model by the BAAQMD. Annual DPM and PM_{2.5} concentrations from construction activities during 2019 were calculated

⁸ Bay Area Air Quality Management District (BAAQMD), 2012. *Recommended Methods for Screening and Modeling Local Risks and Hazards, Version 3.0*. May.

using the model. DPM and PM_{2.5} concentrations were calculated at sensitive receptors in the vicinity of the road construction work areas at a receptor height of 1.5 meters (4.9 feet) and 1 meter (3.3 feet) to represent the breathing heights of residences living in the surrounding single-family homes and the breathing heights of the children attending Orchard School.

The maximum-modeled annual DPM and PM_{2.5} concentrations, which includes both the DPM and fugitive PM_{2.5} concentrations, were identified at nearby sensitive receptors (as shown in Figure 1) to find the maximally exposed individuals (MEIs). Using the maximum annual modeled DPM concentrations, the maximum increased cancer risks were calculated using BAAQMD recommended methods and exposure parameters described in *Attachment 3*. Non-cancer health hazards and maximum PM_{2.5} concentrations were also calculated and identified.

Results of this assessment indicated that the residential MEI was located at a single-family home (1.5-meter breathing height) located north of the project site. The maximum excess residential cancer risks at this location would be 4.2 per million (assuming infant exposure), which would not exceed the BAAQMD significance threshold of 10 in one million. The risk impacts at the school, assuming child exposure would be 1.0 per million, which are also less than the BAAQMD single-source thresholds for cancer risks. Table 5 summarizes the maximum cancer risks, PM_{2.5} concentrations, and health hazard indexes for project related construction activities affecting the residential and school MEI. *Attachment 4* includes the construction emission calculations used for the modeling and the cancer risk calculations.

Figure 1. Project Construction Areas, Locations of Nearby Sensitive Receptors and Locations of Maximum TAC Impact

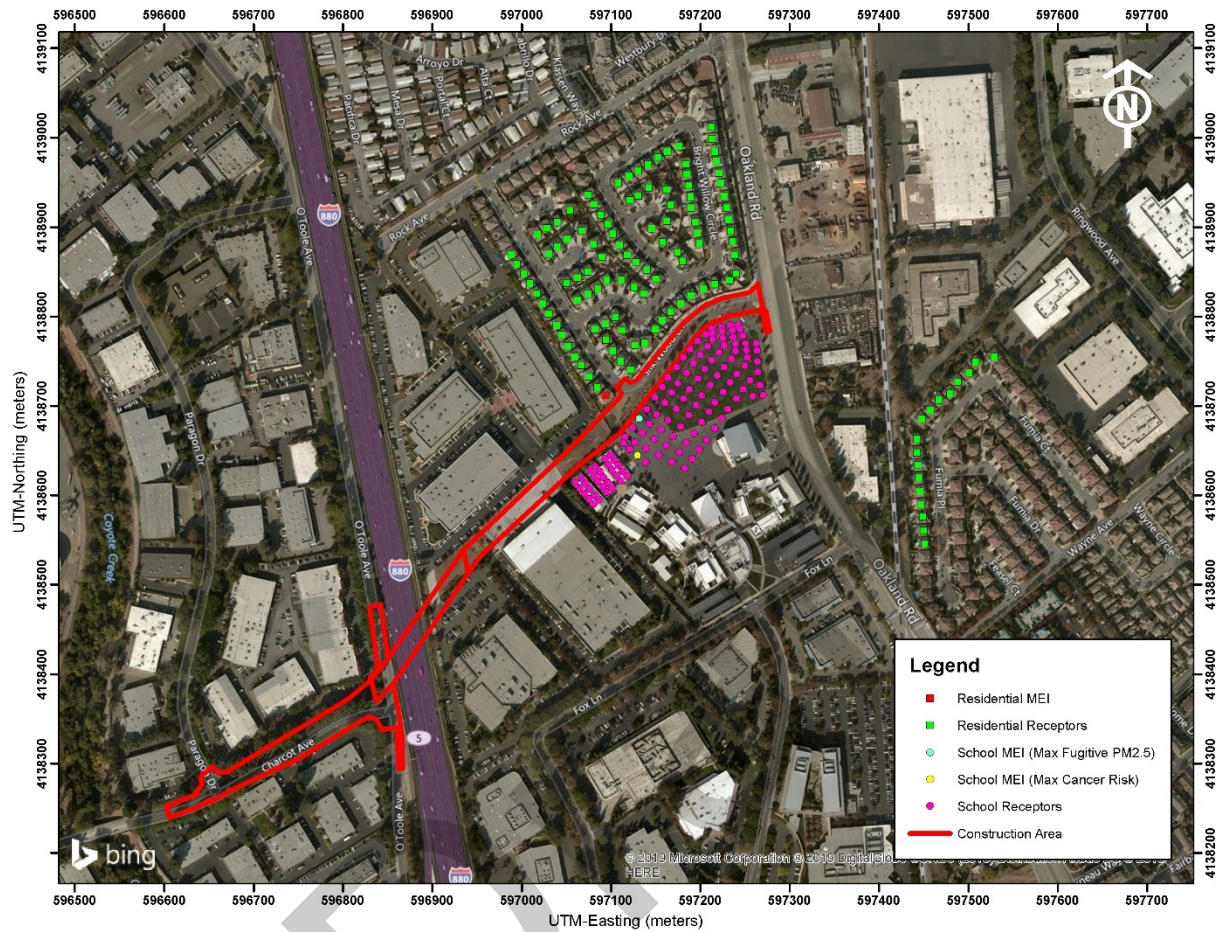


Table 5. Maximum Community Risks from Project Construction Activities

Location and Exposure Type	Cancer Risk (per million)	Annual PM _{2.5} (µg/m ³) ¹	Chronic Hazard Index
<i>Maximum Residential</i>			
Unmitigated	4.2 (Infant)	0.10	<0.01
Significant?	No	No	No
<i>Orchard School (Child)</i>			
Unmitigated	1.0	0.17	0.01
Significant?	No	No	No
BAAQMD Single-Source Threshold	>10.0	>0.3	>0.1

Note: ¹The annual PM_{2.5} concentration is the sum of the DPM and fugitive PM_{2.5} concentrations.

Community Risk from Project Operation

The project would be constructed adjacent to existing sensitive receptors including residences and a school. Substantial sources of air pollution such as roadways can adversely affect nearby sensitive receptors as part of implementing new projects.

A refined analysis of the impacts of TACs and PM_{2.5} to existing sensitive receptors was conducted to evaluate potential cancer risks and PM_{2.5} concentrations from traffic on Charcot Avenue once constructed. Refined modeling of local roadways provides more accurate results than screening procedures since project specific information is used in the modeling. This includes roadway orientation with respect to receptors (i.e., where existing residences and school receptors would be located with respect to traffic), emission estimates (i.e., based on traffic speeds and traffic mix), and meteorological conditions near the project.

This analysis involved the development of DPM, organic TACs, and PM_{2.5} emissions for future traffic on Charcot Avenue using the CARB CT-EMFAC emissions model and using an air quality dispersion model to calculate TAC and PM_{2.5} concentrations at nearby sensitive receptors. Maximum increased lifetime cancer risks and annual PM_{2.5} concentrations for sensitive receptors were then computed using modeled TAC and PM_{2.5} concentrations and the methods and exposure parameters described in *Attachment 3*.

For this analysis, Charcot Avenue was assumed to be constructed and in use by 2020 or thereafter. In order to estimate TAC and PM_{2.5} emissions for calculating increased cancer risks to sensitive receptors from future traffic on Charcot Avenue the CT-EMFAC model was used to develop vehicle emission factors and emissions for the years 2020, 2025, and 2040 using the calculated mix of cars and trucks for Santa Clara County. Year 2040 emissions were conservatively assumed as being representative of future conditions beyond 2040 since overall vehicle emissions (and in particular diesel truck emissions) will decrease in the future. Default vehicle model fleet age distributions for Santa Clara County were assumed in calculating the emissions. Traffic for Charcot Avenue was based on the traffic increase along Charcot Avenue (Project – No Project), as reported by Hexagon⁹. Average hourly traffic distributions for Santa Clara County roadways were developed using the EMFAC model,¹⁰ which were then applied to the average daily traffic volumes to obtain estimated hourly traffic volumes and emissions for Charcot Avenue. An average travel speed of 25 mph was assumed in calculating traffic emissions.

For PM_{2.5} emissions from vehicles traveling on Charcot Avenue, all PM_{2.5} emissions from all vehicles were used, rather than just the PM_{2.5} fraction from diesel powered vehicles, because all vehicle types (i.e., gasoline and diesel powered) produce PM_{2.5}. Additionally, PM_{2.5} emissions from vehicle tire and brake wear and from re-entrained roadway dust, calculated using CARB emission calculation procedures were included in these emissions.¹¹

⁹ Hexagon Transportation Consultants. 2018. Memorandum to Natalina Bernardi & Chiaming Chi, BKF Engineers from Robert Del Rio, November 12.

¹⁰ The Burden output from EMFAC2007, a prior version of CARB's EMFAC model, was used for this since CT-EMFAC does not include Burden type output with hour by hour traffic volume information.

¹¹ CARB, 2014. *Miscellaneous Process Methodology 7.9, Entrained Road Travel, Paved Road Dust*. Revised and updated, April 2014.

Dispersion modeling of TAC and PM_{2.5} emissions was conducted using the U.S. EPA AERMOD model, which is recommended by the BAAQMD for this type of analysis. North- and south-bound traffic on Charcot Avenue along a 0.4-mile length of roadway (2,112 feet) was evaluated with the model. This is the portion of the roadway closest to the sensitive receptors that would affect their exposure. A five-year data set (2006-2010) of hourly meteorological data from the San Jose Airport prepared by the BAAQMD for use with the AERMOD model was used. Vehicle traffic on the road segments were modeled as a series of adjacent volume sources along a line (line volume sources), with line segments used for each travel direction. Other inputs to the model included road geometry, volume source information, hourly traffic emissions, and receptor locations. The modeling used the same residential receptors and Orchard School receptors, as described above for evaluating construction impacts. Figure 2 shows the project site area, roadway segments modeled, and sensitive receptor locations used in the modeling.

The maximum-modeled annual TAC and PM_{2.5} concentrations from future traffic on Charcot Avenue were identified at nearby sensitive receptors (as shown in Figure 2). Using the maximum annual modeled TAC concentrations, the maximum increased cancer risks were calculated using BAAQMD recommended methods and exposure parameters described in *Attachment 3*. Non-cancer health hazards and maximum PM_{2.5} concentrations were also calculated and identified.

Results of this assessment indicated that the residential impact from traffic was located at a single-family home (1.5-meter breathing height) located adjacent to the northeast side of Charcot Avenue. The maximum excess residential cancer risks at this location would be below the BAAQMD significance threshold of 10 in one million. The risk impacts at the school, assuming child exposure, were less than the BAAQMD single-source thresholds. Table 6 summarizes the maximum cancer risks, PM_{2.5} concentrations, and health hazard indexes from future traffic on Charcot Avenue. *Attachment 5* includes the emission calculations used for the modeling and the cancer risk calculations.

Table 6. Maximum Community Risks from Charcot Avenue Traffic

Location and Exposure Type	Cancer Risk (per million)	Annual PM_{2.5} (µg/m³)¹	Chronic Hazard Index
Maximum Residential	4.9	0.18	<0.01
<i>Significant?</i>	<i>No</i>	<i>No</i>	<i>No</i>
At location of Construction Residential MEI	3.3	0.16	<0.01
<i>Significant?</i>	<i>No</i>	<i>No</i>	<i>No</i>
Orchard School (Child)	0.9	0.25	<0.01
<i>Significant?</i>	<i>No</i>	<i>No</i>	<i>No</i>
BAAQMD Single-Source Threshold	>10.0	>0.3	>0.1

Note: ¹The annual PM_{2.5} concentration is the sum of the DPM and fugitive PM_{2.5} concentrations.

Figure 2. Charcot Avenue Segments Modeled and Locations of Nearby Sensitive Receptors and Locations of Maximum TAC Impact From Roadway Traffic



Combined Construction and Operation Cancer Risk

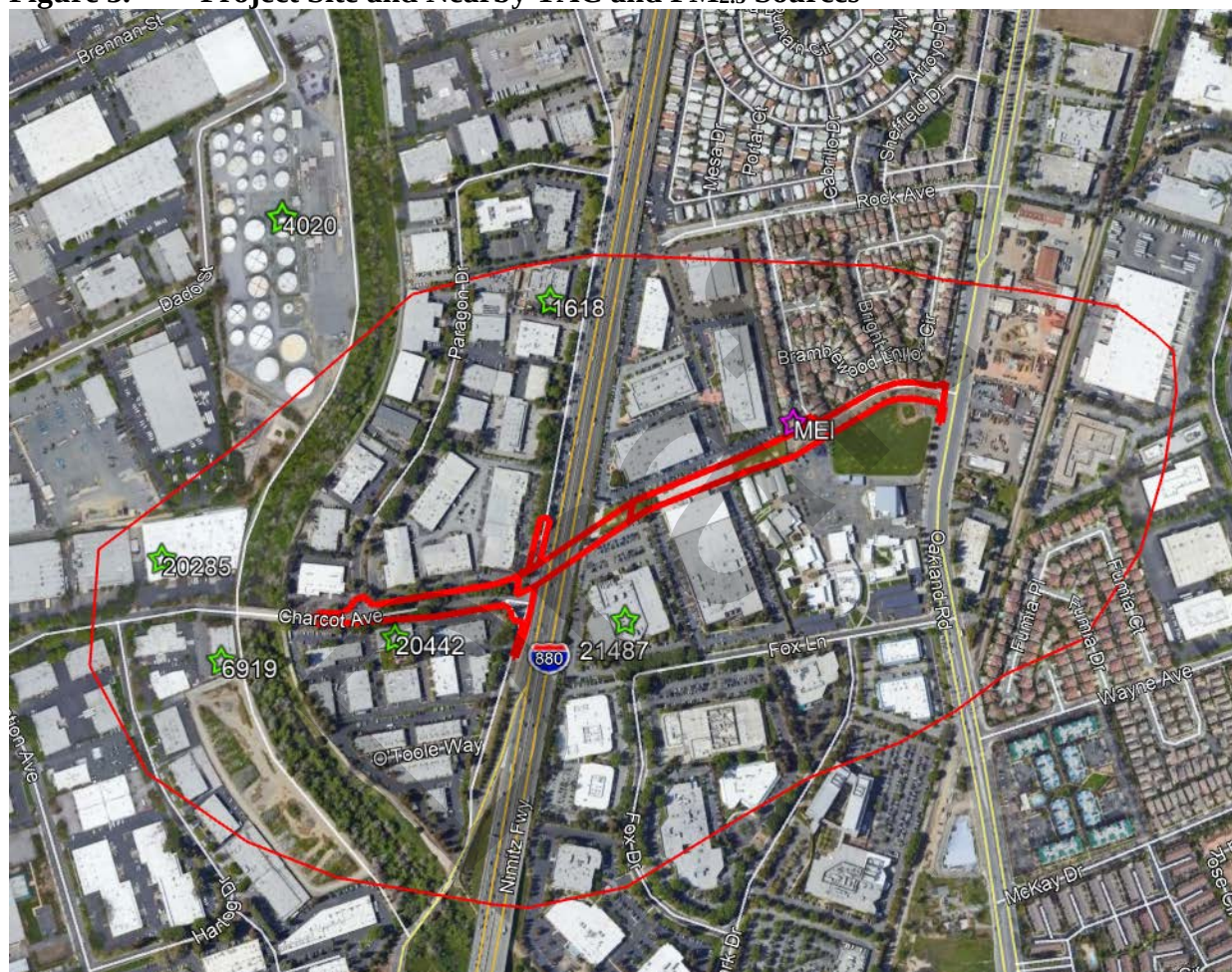
The combination of construction activity and roadway operation were computed by adding the construction cancer risk for an infant (see Table 5) to the lifetime cancer risk for the project operational conditions for the roadway at the construction residential MEI (see Table 6) over a 30-year period. Therefore, one year of construction cancer risks and 29 years of operational roadway cancer risks were summed together. Under this condition, the maximum increased cancer risk would be 7.5 chances per million. This combined cancer risk would be below the significance threshold for a single project of 10.0 chances per million.

Cumulative Impact at Construction Project MEIs

Cumulative community risk impacts were addressed through an evaluation of TAC sources located within 1,000 feet of the construction MEI. These sources include freeways or highways, busy

surface streets, and stationary sources identified by BAAQMD. A review of the project area indicates that Interstate 880 and Oakland Road are busy roadways that are sources of TACs. Other nearby streets are assumed to have less than 10,000 vehicles per day. A review of the BAAQMD's stationary source Google Earth map tool identified six stationary sources with the potential to affect the construction MEI. Figure 3 shows the sources within the 1,000 feet of the proposed project. Community risk impacts from these sources upon the project MEI are reported in Table 7. Details of the modeling and community risk calculations are included in *Attachment 6*.

Figure 3. Project Site and Nearby TAC and PM_{2.5} Sources



Highways – Interstate 880

BAAQMD provides a Google Earth *Highway Screening Analysis Tool* that can be used to identify screening level impacts from State highways. Interstate 880 (used Link 350, 6-ft impact height within the tool) risk impacts were screened using the BAAQMD *Highway Screening Analysis Tool*. The lifetime cancer risk, annual PM_{2.5} exposure and non-cancer hazard index corresponding to the distance between the project and the site was used. The data were based on the residential and school MEI being 800 feet east of the highway. Cancer risk levels were adjusted for exposure duration, age, and new exposure guidance provided by OEHHA, as described in *Attachment 3*. The risk impacts from Interstate 880 are discussed in Table 7.

Local Roadways – Oakland Road

For local roadways, BAAQMD has provided the *Roadway Screening Analysis Calculator* to assess whether roadways with traffic volumes of over 10,000 vehicles per day may have a potentially significant effect on a proposed project. Two adjustments were made to the cancer risk predictions made by this calculator: (1) adjustment for latest vehicle emissions rates predicted using EMFAC2014 and (2) adjustment of cancer risk to reflect new Office of Environmental Health Hazard Assessment (OEHHA) guidance (see *Attachment 3*).

The calculator uses EMFAC2011 emission rates for the year 2014. In addition, a new version of the emissions factor model, EMFAC2014 is available. This version predicts lower emission rates. An adjustment factor of 0.5 was developed by comparing emission rates of total organic gases (TOG) for running exhaust and running losses developed using EMFAC2011 for year 2014 and those from EMFAC2014 for 2018.

The predicted cancer risk was then adjusted using a factor of 1.3744 to account for new OEHHA guidance. This factor was provided by BAAQMD for use with their CEQA screening tools that are used to predict cancer risk.

The average daily traffic (ADT) on Oakland Road for the year 2025 was estimated to be 35,000 vehicles. This estimate was based on the yearly plus project roadway segment traffic volume projections calculated by the traffic consultants.¹²

The BAAQMD *Roadway Screening Analysis Calculator* for Santa Clara County was used for the roadway. Oakland road was identified as a north-south roadway with the residential and school MEIs being 500 and 400 feet west of the roadway, respectively. Estimated risk values for both MEIs are listed in Table 7. Note that BAAQMD has found that non-cancer hazards from all local roadways would be well below the BAAQMD thresholds. Chronic or acute HI for the roadway would be below 0.03.

Stationary Sources

Permitted stationary sources of air pollution near the project site were identified using BAAQMD's *Stationary Source Risk & Hazard Analysis Tool*. This mapping tool uses Google Earth and identified the location of six stationary sources and their estimated risk and hazard impacts. A Stationary Source Information Form (SSIF) containing the six identified sources was prepared and submitted to BAAQMD. They provided updated risk levels, emissions and adjustments to account for new OEHHA guidance¹³. The agency noted that Plant #21487 (Micrus Endovascular, LLC) had shutdown. The risk impacts from the remaining five stationary sources (Plant #20285, 6919, 20442, 1618, and 4020) were either not adjusted for distance or screened further using refined modeling (e.g. distance adjustment or Beta Calculator).

¹² Hexagon Transportation Consultants, Inc., *CEQA Traffic Analysis for the Charcot Avenue Extension Over I-880 Memorandum*. 12 November 2018.

¹³ Correspondence with Areana Flores, BAAQMD, 14 January 2019.

Plants #20285, 20442, 1618 (e.g. Southwest Offsite Printing Co, Inc., Epiphotonics Corp, and Sanmina Corporation) are stationary sources whose risks values were not adjusted for distance. The risk values provided were used in the cumulative analysis.

The emissions file for Plant #6919 (Applied Anodize, Inc.) was provided by the District. Therefore, the BAAQMD *Risk and Hazards Emissions Screening Calculator (Beta Version)* was used to calculate the risk impacts from this source. The cancer risks were then adjusted with the OEHHA factor of 1.3744.

The risk values from Plant #4020 (SFPP, LP) were adjusted for distance using the BAAQMD's *Distance Adjustment Multiplier Tool for Gasoline Dispensing Facilities*. The stationary source is over 1,000-ft from the residential and school MEIs.

Cumulative Community Health Risk at Construction MEI

Cumulative TAC impacts are assessed by predicting the combined community risk impacts at the residential and school construction MEIs as per the BAAQMD methods for modeling local risks and hazards.¹⁴ Table 7 reports both the construction and cumulative community risk impacts at both the residential and school MEIs. Based on the table results, the project would have a *less-than-significant* impact with respect to community risk caused by project construction activities since the maximum cancer risks, maximum PM_{2.5} concentrations and the HIs for both MEIs do not exceed their respective single-source thresholds. Additionally, Table 7 shows that the combined cancer risk, PM_{2.5} concentrations and Hazard risk values would not exceed the BAAQMD cumulative thresholds.

¹⁴ Bay Area Air Quality Management District, *Recommended Methods for Screening and Modeling Local Risks and Hazards*. May 2012.

Table 7. Combined Community Risk Impacts

Source	Maximum Cancer Risk (per million)	Maximum Annual PM _{2.5} Concentration* (µg/m ³)	Maximum Hazard Index
Construction Impacts to Off-Site Receptors (at MEI)			
<i>Maximum Residential Orchard School (Child)</i>	4.2 (Infant) 1.0 (child)	0.10 0.17	0.01 <0.01
Roadways			
Charcot Avenue (Refined Modeling)			
At Construction Residential MEI	3.3	0.16	<0.01
At Construction School MEI	0.9	0.25	<0.01
Oakland Road (Roadway Screening Calculator)			
At 500-ft West for Residential MEI	1.9	0.05	<0.03
At 400-ft West for School MEI	2.2	0.06	<0.03
Interstate 880 (Highway Screening Calculator)			
At 800-ft West for Residential MEI	19.9	0.12	0.01
At 900-ft West for School MEI	14.28	0.08	0.01
Stationary Sources			
Plant #20285 (Southwest Offset Printing Co, Inc)	-	-	0.07
Plant #6919 (Applied Anodize, Inc)	<0.1	0.01	<0.01
Plant #20442 (Epiphotonics Corporation)	-	<0.01	<0.01
Plant #1618 (Sanmina Corporation)	-	-	0.20
Plant #4020 (SFPP, Oil & Natural Gas Source)	1.5	-	0.75
Cumulative Total			
<i>Residential MEI Unmitigated</i>	30.9	0.35	<1.10
<i>School MEI Unmitigated</i>	20.0	0.58	<1.10
BAAQMD Threshold – Cumulative Sources	>100	>0.8	>10.0
<i>Significant?</i>			
Unmitigated			
Mitigated	No	No	No
* PM2.5 from construction and operation are not additive			

Impact 4: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? *Less than significant.*

GHG emissions associated with development of the proposed project would occur over the short-term from construction activities, consisting primarily of emissions from equipment exhaust and worker and vendor trips. There would also be long-term operational emissions associated with vehicular traffic on the new roadway. Emissions for the proposed project are discussed below and were analyzed using the methodology recommended in the BAAQMD CEQA Air Quality Guidelines.¹⁵

¹⁵ BAAQMD, 2017. *Op cit.*

Existing Conditions

Under existing conditions, there is no extended roadway and the potential for direct GHG emissions is inconsequential because the emissions from the street lighting and vehicles traveling on the current alignment are small. Therefore, existing GHG emissions are considered nonexistent. Indirect emissions are generated from the burning of fuel required for site maintenance (e.g., infrequent disking and/or mowing to control fire hazards, etc.).

Construction Greenhouse Gas Emissions (Temporary Emissions)

GHG emissions for transportation projects can be divided into those produced during construction and those produced during operations. Currently, neither City of San Jose nor BAAQMD have adopted GHG significance thresholds that apply to construction projects. For informational purposes, GHG emissions from project construction are estimated to be 1,410 metric tons of CO_{2e} over the course of the entire construction project based on Roadway Construction Emissions Model modeling described above.

Operational Greenhouse Gas Emissions (Ongoing Emissions)

GHG emissions (e.g., carbon dioxide, methane, and nitrogen dioxide) from operation of the project will include fuel burned while traveling on the new roadway, there will be a shift in traffic from other congested routes which will increase the overall effectiveness of the transportation system and having a positive impact to the GHG emissions. These emissions were evaluated using CT-EMFAC2014, as described under Impact 2. The EMFAC 2014 emissions factors were developed using the latest version of the CT-EMFAC2014 model (Version 6.0, November 2015), developed by *Sonoma Technology, Inc.* CT-EMFAC2014 provides composite emission rates based on vehicle mix, speed, year, and area (i.e., County). The model was run using the procedures described in the UC Davis Methodology for the Santa Clara County. The CO_{2e} emissions were computed for daily conditions. These were assumed to occur 365 days per year to compute annual emissions that are shown in Table 8.

Table 8. CO_{2e} Emissions in Metric Tons per Year

Existing	Existing + Project	2025 No-Build	2025 Build	2040 No-Build	2040 Build
598,123	585,605	698,812	688,980	847,438	841,842
Project Difference	(12,518)		(9,832)		(5,596)
	-0.35%		-0.23%		-0.11%

Supplemental Analysis: Charcot Avenue Alternative Designs for Eastern Roadway

In addition to the proposed roadway extension, the project includes two design alternatives for the eastern part of the roadway to reduce the number of turning lanes at the intersection of Charcot Avenue extension and Oakland Road. Alternative 1 proposes to eliminate the second northbound left lane from Oakland Road to Charcot Avenue and subsequently eliminate the need for a receiving lane along westbound Charcot Avenue. Alternative 1 would have one westbound and two eastbound lanes at the intersection of Charcot Avenue and Oakland Road. Alternative 2 proposes to eliminate eastbound Charcot Avenue left-turn lane to northbound Oakland Road and will have two westbound and one eastbound lane at the intersection of Charcot Avenue and Oakland Road.

Traffic conditions and overall construction activity are anticipated to be similar to the proposed project. Therefore, emissions of air pollutants and GHG associated with the alternatives is expected to be the same as those from the proposed project.

To compare the differences between the two alternatives, AERMOD was used in the same manner as described above in the Dispersion Modeling section to calculate the risk impacts from construction and operation of the roadway. The project applicant provided separate construction information for the western part of Charcot Avenue and for the two alternative eastern roadway designs.

The traffic volumes and speed would not change under either of these alternatives compared to the proposed project. The construction and operational modeling that was performed for the proposed project was updated to include the impacts from these alternatives. The maximum impacts from the project only under these alternatives is compared and reported in Table 9. The combined levels from cumulative sources at the location of maximum impact are reported in Table 10.

Table 9. Comparison of Results from Charcot Avenue for Alternatives 1 and 2

Location and Exposure Type		Cancer Risk (per million)	Annual PM _{2.5} (µg/m ³) ¹	Chronic Hazard Index
Alternative 1				
Operational Maximum at Non-Construction MEI for School ¹		0.8	0.23	< 0.01
Operational at Construction MEI for School		0.4	0.12	< 0.01
Operational Maximum at Non-Construction MEI for Residential ¹		5.0	0.18	< 0.01
Residential Construction MEI	Construction Maximum	3.7	0.09	<0.01
	Operational Maximum	3.2	0.16	< 0.01
	Maximum Combined Impact ²	6.9	0.16	<0.01
Alternative 2				
Operational Maximum at Non-Construction MEI for School ¹		0.9	0.24	< 0.01
Operational at Construction MEI for School		0.4	0.12	< 0.01
Operational Maximum at Non-Construction MEI for Residential ¹		5.0	0.18	< 0.01
Residential Construction MEI	Construction Maximum	3.7	0.09	<0.01
	Operational Maximum	3.3	0.16	< 0.01
	Maximum Combined Impact ²	7.0	0.16	<0.01
Notes: (1) Locations of maximum residential impact and the residential MEI for construction are at different receptors and the locations of maximum school child impacts and the school child MEI from construction are different. (2) The cancer risk at the residential construction MEI is calculated based on 29 years of exposure to road operation. The first year of exposure (2019) is assumed to be 0 from road when construction is occurring.				

The combined levels from cumulative sources at the location of maximum impact (i.e., the Residential Construction MEI) are reported in Table 10. The table shows the combined cancer risk impacts (i.e. the cancer risk impact from both construction and operation of the roadway), the maximum PM_{2.5} concentration, and the maximum HI for the proposed project, Alternative 1, and Alternative 2. The overall cumulative risk impacts for all three scenarios is also presented.

As seen in Table 10, the maximum impacts from construction and operation of the project would not exceed significance thresholds for single sources at either the maximum affected residential receptor nor the maximum affected school receptor in none of the scenarios. The cumulative risks for the scenarios at the residential and school combined would also not exceed the BAAQMD cumulative source threshold for cancer risks, PM_{2.5}, and HI. Therefore, all three roadway designs would have a *less-than-significant* impact.

Table 10: Comparison of Cumulative Health Risks by Alternative																		
	Maximum Cancer Risk (per million)						Maximum Annual PM_{2.5} Concentration (µg/m³)						Maximum Hazard Index					
	Proposed Project		Alternative 1		Alternative 2		Proposed Project		Alternative 1		Alternative 2		Proposed Project		Alternative 1		Alternative 2	
	Resident MEI	School MEI	Resident MEI	School MEI	Resident MEI	School MEI	Resident MEI	School MEI	Resident MEI	School MEI	Resident MEI	School MEI	Resident MEI	School MEI	Resident MEI	School MEI	Resident MEI	School MEI
Project																		
Construction + Operation	7.5	1.9	6.9	1.4	7.0	1.4												
Maximum Risk							0.16	0.25	0.16	0.17	0.16	0.17	0.01	0.01	0.01	0.01	0.01	0.01
Cumulative																		
Oakland Road	1.9	2.2	1.9	2.2	1.9	2.2	0.05	0.06	0.05	0.06	0.05	0.05	0.03	0.03	0.03	0.03	0.03	0.03
I-880	19.9	14.3	19.9	14.3	19.9	14.3	0.12	0.08	0.12	0.08	0.12	0.08	0.01	0.01	0.01	0.01	0.01	0.01
Plant #20285													0.07	0.07	0.07	0.07	0.07	0.07
Plant 6919	0.1	0.1	0.1	0.1	0.1	0.1	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Plant 20442								0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Plant 1618													0.20	0.20	0.20	0.20	0.20	0.20
Plant 4020	1.5	1.5	1.5	1.5	1.5	1.5							0.75	0.75	0.75	0.75	0.75	0.75
Total for Project + Cumulative Sources	30.9	20.0	30.3	19.5	30.4	19.5	0.34	0.41	0.35	0.33	0.35	0.32	1.09	1.09	1.09	1.09	1.09	1.09
BAAQMD Threshold for Cumulative Sources	>100	>100	>100	>100	>100	>100	>0.8	>0.8	>0.8	>0.8	>0.8	>0.8	>10.0	>10.0	>10.0	>10.0	>10.0	>10.0
Significant Impact?	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No

Attachment 1: Construction Emissions (Roadway Construction Emissions Model) and Assumptions

Draft

Project Name: Charcot Avenue (WEST) - Roadway (75 Work Days)								Complete ALL Portions in Yellow
See Equipment Type TAB for type, horsepower and load factor								
Project Size		Dwelling Units		total project acres disturbed				
		s.f. residential						
		s.f. retail						
		s.f. office/commercial						
		s.f. other, specify:						
		s.f. parking garage		spaces				
		s.f. parking lot		spaces				
Construction Hours		am to		pm				
Qty	Description	HP	Load Factor	Hours/day	Total Work Days	Avg. Hours per day	Annual Hours	Comments
Grading / Excavation		Start Date:		Total phase:	17			
		End Date:						
		Soil Hauling Volume						
2	Excavators	162	0.38	6	8	2.82	96	Export volume = 5,500 cubic yards?
2	Graders	174	0.41	6	8	2.82	96	Import volume = ? cubic yards?
4	Rubber Tired Dozers	255	0.4	6	6	2.12	144	
4	Tractors/Loaders/Backhoes	97	0.37	6	6	2.12	144	
Other Equipment?								
Trenching/Foundation		Start Date:		Total phase:	13			
Drainage		End Date:						
4	Tractor/Loader/Backhoe	97	0.37	8	7	4.31	224	
4	Excavators	162	0.38	8	7	4.31	224	
2	Forklifts	89	0.2	4	3	0.92	24	
2	Cement and Mortar Mixers	9	0.56	8	3	0.53	48	
Other Equipment?								
Paving & Roadway Items		Start Date:		Total phase:	45			
		Start Date:	5/6/2021					
2	Cement and Mortar Mixers	9	0.56	4	6	0.53	48	Asphalt? 1700 cubic yards or ____ round trips?
2	Pavers	125	0.42	6	10	1.33	120	
2	Paving Equipment	130	0.36	6	10	1.33	120	
2	Rollers	80	0.38	6	10	1.33	120	
4	Tractors/Loaders/Backhoes	97	0.37	6	10	1.33	240	
10	Trucks: Hauling & Equipment	150	0.3	8	35	6.22	2800	
Other Equipment?								

Project Name: Charcot Avenue (EAST Alt 1) - Roadway (55 Work Days)								Complete ALL Portions in Yellow
See Equipment Type TAB for type, horsepower and load factor								
Project Size					Dwelling Units		total project acres disturbed	
					s.f. residential			
					s.f. retail			
					s.f. office/commercial			
					s.f. other, specify:			
					s.f. parking garage		spaces	
					s.f. parking lot		spaces	
Construction Hours					am to		pm	
Qty	Description	HP	Load Factor	Hours/day	Total Work Days	Avg. Hours per day	Annual Hours	Comments
Grading / Excavation		Start Date:		Total phase:	15			
		End Date:						
								Soil Hauling Volume
2	Excavators	162	0.38	6	7	2.80	84	Export volume = <u>4,500</u> cubic yards?
2	Graders	174	0.41	6	7	2.80	84	Import volume = ? cubic yards?
4	Rubber Tired Dozers	255	0.4	6	5	2.00	120	
4	Tractors/Loaders/Backhoes	97	0.37	6	5	2.00	120	
Other Equipment?								
Trenching/Foundation		Start Date:		Total phase:	10			
Drainage		End Date:						
4	Tractor/Loader/Backhoe	97	0.37	8	5	4.00	160	
4	Excavators	162	0.38	8	5	4.00	160	
2	Forklifts	89	0.2	4	2	0.80	16	
2	Cement and Mortar Mixers	9	0.56	8	2	0.53	32	
Other Equipment?								
Paving & Roadway Items		Start Date:		Total phase:	30			
		Start Date:						
2	Cement and Mortar Mixers	9	0.56	4	4	0.53	32	Asphalt? <u>1300</u> cubic yards or ____ round trips?
2	Pavers	125	0.42	6	7	1.40	84	
2	Paving Equipment	130	0.36	6	7	1.40	84	
2	Rollers	80	0.38	6	7	1.40	84	
4	Tractors/Loaders/Backhoes	97	0.37	6	7	1.40	168	
10	Trucks: Hauling & Equipment	150	0.3	8	25	6.67	2000	
Other Equipment?								

Project Name: Charcot Avenue (East Alt 2) - Roadway (50 Work Days)									Complete ALL Portions in Yellow
See Equipment Type TAB for type, horsepower and load factor									
Project Size _____ Dwelling Units _____ total project acres disturbed _____ _____ s.f. residential _____ _____ s.f. retail _____ _____ s.f. office/commercial _____ _____ s.f. other, specify: _____ _____ s.f. parking garage _____ spaces _____ s.f. parking lot _____ spaces									
Construction Hours _____ am to _____ pm									
Qty	Description	HP	Load Factor	Hours/day	Total Work Days	Avg. Hours per day	Annual Hours	Comments	
Grading / Excavation		Start Date: _____	Total phase: _____		13				
		End Date: _____							
								Soil Hauling Volume	
2	Excavators	162	0.38	6	6	2.77	72	Export volume = <u>4,900</u> cubic yards?	
2	Graders	174	0.41	6	6	2.77	72	Import volume = ? cubic yards?	
4	Rubber Tired Dozers	255	0.4	6	4	1.85	96		
4	Tractors/Loaders/Backhoes	97	0.37	6	4	1.85	96		
Other Equipment?									
Trenching/Foundation		Start Date: _____	Total phase: _____		9				
Drainage		End Date: _____							
4	Tractor/Loader/Backhoe	97	0.37	7	5	3.89	140		
4	Excavators	162	0.38	7	5	3.89	140		
2	Forklifts	89	0.2	4	2	0.89	16		
2	Cement and Mortar Mixers	9	0.56	8	2	0.57	32		
Other Equipment?									
Paving & Roadway Items		Start Date: _____	Total phase: _____		28				
		Start Date: _____							
2	Cement and Mortar Mixers	9	0.56	4	4	0.57	32	Asphalt? <u>1500</u> cubic yards or _____ round trips?	
2	Pavers	125	0.42	6	6	1.29	72		
2	Paving Equipment	130	0.36	6	6	1.29	72		
2	Rollers	80	0.38	6	6	1.29	72		
4	Tractors/Loaders/Backhoes	97	0.37	6	6	1.29	144		
10	Trucks: Hauling & Equipment	150	0.3	8	23	6.57	1840		
Other Equipment?									

Project Name:		Charcot Avenue Overcrossing						Complete ALL Portions in Yellow	
		Bridge Construction							
	See Equipment Types TAB for type, horsepower and load factor								
Qty	Description	HP	Load Factor	Hours/day	Total Work Days	Avg Hrs/Day	Annual Hours	Comments	
		Start Date:						220 Working Days Assumed for Bridge Construction	
		End Date:			220				
1	Tractors/Loaders/Backhoes	97	0.3685	8	80	2.9	640		
1	Cranes	231	0.2881	3	100	1.4	300		
1	Bore/Drill Rigs	221	0.5	8	40	1.5	320		
2	Generator Sets	84	0.4958	8	200	7.3	3200		
1	Welders	46	0.3015	4	20	0.4	80		
2	Air Compressors	78	0.32	2	40	0.4	160	Soil Hauling Volume	
1	Aerial Lift	63	0.3	2	60	0.5	120	Export volume = <u>3,580</u> cubic yards?	
2	Trucks:Hauling tools, materials, equip	150	0.3	8	200	7.3	3200	Import volume = <u>21,000</u> cubic yards?	
2	Concrete Pumper	84	0.74	8	50	1.8	800	Concrete Trucks? <u>530</u> Total Round-Trips	
2	Concrete Mixer Trucks (Diesel)	?	?	8	70	2.5	65		

Road Construction Emissions Model		Version 8.1.0	
Data Entry Worksheet			
Note: Required data input sections have a yellow background. Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background. The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types. Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.			
Input Type			
Project Name	Charcot Extension (WEST Roadway)		
Construction Start Year	2019	Enter a Year between 2014 and 2025 (inclusive)	
Project Type	1	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction	
Project Construction Time	3.40	months	
Working Days per Month	22.00	days (assume 22 if unknown)	
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	2	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the lone formation (Scott Road, Rancho Murietta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murietta)	
Project Length	0.20	miles	
Total Project Area	2.16	acres	
Maximum Area Disturbed/Day	1.00	acre	
Water Trucks Used?	1	1. Yes 2. No	
Material Hauling Quantity Input			
Material Type	Phase	Haul Truck Capacity (yd ³) (assume 20 if unknown)	Import Volume (yd ³ /day)
Soil	Grubbing/Land Clearing		
	Grading/Excavation	20.00	324.00
	Drainage/Utilities/Sub-Grade		
	Paving		
Asphalt	Grubbing/Land Clearing		
	Grading/Excavation		
	Drainage/Utilities/Sub-Grade		
	Paving	20.00	37.70
Mitigation Options			
On-road Fleet Emissions Mitigation	No Mitigation	Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer	
Off-road Equipment Emissions Mitigation	No Mitigation	Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/ceqa/mitigation.shtml). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard	

The remaining sections of this sheet contain areas that can be modified by the user, although those modifications are optional.



Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County.

http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing	0.00	0.34		1/1/2019
Grading/Excavation	0.77	1.53		1/1/2019
Drainage/Utilities/Sub-Grade	0.59	1.02		1/25/2019
Paving	2.00	0.51		2/12/2019
Totals (Months)		3		

Please note: You have entered a different number of months than the project length shown in cell D16.

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions		User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT					
User Input											
Miles/round trip: Grubbing/Land Clearing		2.00	30.00		0	0.00					
Miles/round trip: Grading/Excavation		2.00	30.00		17	34.00					
Miles/round trip: Drainage/Utilities/Sub-Grade		2.00	30.00		0	0.00					
Miles/round trip: Paving		2.00	30.00		0	0.00					
Emission Rates		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/mile)		0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03
Drainage/Utilities/Sub-Grade (grams/mile)		0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03
Paving (grams/mile)		0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03
Hauling Emissions		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation		0.01	0.04	0.37	0.01	0.01	0.00	123.48	0.00	0.00	124.73
Tons per const. Period - Grading/Excavation		0.00	0.00	0.00	0.00	0.00	0.00	1.05	0.00	0.00	1.06
Pounds per day - Drainage/Utilities/Sub-Grade		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project		0.00	0.00	0.00	0.00	0.00	0.00	1.05	0.00	0.00	1.06

Note: Asphalt Hauling emission default values can be overridden in cells D87 through D90, and F87 through F90.

Asphalt Hauling Emissions		User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
User Input						
Miles/round trip: Grubbing/Land Clearing		30.00		0	0.00	
Miles/round trip: Grading/Excavation		30.00		0	0.00	
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		0	0.00	
Miles/round trip: Paving		30.00		2	60.00	

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/mile)	0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03
Draining/Utilities/Sub-Grade (grams/mile)	0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03
Paving (grams/mile)	0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03
Emissions	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.02	0.07	0.66	0.02	0.01	0.00	217.90	0.00	0.01	220.11
Tons per const. Period - Paving	0.00	0.00	0.01	0.00	0.00	0.00	4.79	0.00	0.00	4.84
Total tons per construction project	0.00	0.00	0.01	0.00	0.00	0.00	4.79	0.00	0.00	4.84

Note: Worker commute default values can be overridden in cells D113 through D118.

Worker Commute Emissions		User Override of Worker Commute Default Values		Default Values									
User Input													
Miles/ one-way trip			20		Calculated		Calculated						
One-way trips/day			2		Daily Trips		Daily VMT						
No. of employees: Grubbing/Land Clearing			4		8		160.00						
No. of employees: Grading/Excavation			17		34		680.00						
No. of employees: Drainage/Utilities/Sub-Grade			14		28		560.00						
No. of employees: Paving			10		20		400.00						
Emission Rates		ROG	CO		NOx		PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)		0.00	0.00		0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/mile)		0.02	1.19		0.13		0.05	0.02	0.00	381.71	0.01	0.01	383.53
Draining/Utilities/Sub-Grade (grams/mile)		0.02	1.19		0.13		0.05	0.02	0.00	381.71	0.01	0.01	383.53
Paving (grams/mile)		0.02	1.19		0.13		0.05	0.02	0.00	381.71	0.01	0.01	383.53
Grubbing/Land Clearing (grams/trip)		0.00	0.00		0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)		1.08	2.86		0.23		0.00	0.00	0.00	85.97	0.01	0.01	89.17
Draining/Utilities/Sub-Grade (grams/trip)		1.08	2.86		0.23		0.00	0.00	0.00	85.97	0.01	0.01	89.17
Paving (grams/trip)		1.08	2.86		0.23		0.00	0.00	0.00	85.97	0.01	0.01	89.17
Emissions		ROG	CO		NOx		PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing		0.00	0.00		0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing		0.00	0.00		0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation		0.12	2.00		0.21		0.07	0.03	0.01	578.68	0.02	0.01	581.65
Tons per const. Period - Grading/Excavation		0.00	0.02		0.00		0.00	0.00	0.00	4.90	0.00	0.00	4.93
Pounds per day - Drainage/Utilities/Sub-Grade		0.10	1.65		0.17		0.06	0.02	0.00	476.56	0.01	0.01	479.01
Tons per const. Period - Drainage/Utilities/Sub-Grade		0.00	0.01		0.00		0.00	0.00	0.00	3.09	0.00	0.00	3.11
Pounds per day - Paving		0.07	1.18		0.12		0.04	0.02	0.00	340.40	0.01	0.01	342.15
Tons per const. Period - Paving		0.00	0.03		0.00		0.00	0.00	0.00	7.49	0.00	0.00	7.53
Total tons per construction project		0.00	0.05		0.01		0.00	0.00	0.00	15.48	0.00	0.00	15.56

Note: Water Truck default values can be overridden in cells D145 through D148, and F145 through F148.

Water Truck Emissions		User Override of Default # Water Trucks		Program Estimate of Number of Water Trucks		User Override of Truck Miles Traveled/Vehicle/Day		Default Values		Calculated	
User Input		Default # Water Trucks		Program Estimate of Number of Water Trucks		User Override of Truck Miles Traveled/Vehicle/Day		Default Values		Calculated	
Grubbing/Land Clearing - Exhaust		1		1		40.00		40.00		40.00	
Grading/Excavation - Exhaust		1		1		40.00		40.00		40.00	
Drainage/Utilities/Subgrade		1		1		40.00		40.00		40.00	
Paving		1		1		40.00		40.00		40.00	
Emission Rates		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/mile)		0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03
Draining/Utilities/Sub-Grade (grams/mile)		0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03
Paving (grams/mile)		0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03
Emissions		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation		0.01	0.05	0.44	0.01	0.01	0.00	145.27	0.00	0.00	146.74
Tons per const. Period - Grading/Excavation		0.00	0.00	0.00	0.00	0.00	0.00	1.23	0.00	0.00	1.24
Pounds per day - Drainage/Utilities/Sub-Grade		0.01	0.05	0.44	0.01	0.01	0.00	145.27	0.00	0.00	146.74
Tons per const. Period - Drainage/Utilities/Sub-Grade		0.00	0.00	0.00	0.00	0.00	0.00	0.94	0.00	0.00	0.95
Pounds per day - Paving		0.01	0.05	0.44	0.01	0.01	0.00	145.27	0.00	0.00	146.74
Tons per const. Period - Paving		0.00	0.00	0.01	0.00	0.00	0.00	3.20	0.00	0.00	3.23
Total tons per construction project		0.00	0.00	0.02	0.00	0.00	0.00	5.37	0.00	0.00	5.42

Note: Fugitive dust default values can be overridden in cells D171 through D173.

Fugitive Dust		User Override of Max Acreage Disturbed/Day		Default Maximum Acreage/Day		PM10	PM10	PM2.5	PM2.5
						pounds/day	tons/period	pounds/day	tons/period
Fugitive Dust - Grubbing/Land Clearing				0.00		0.00	0.00	0.00	0.00
Fugitive Dust - Grading/Excavation				1.00		10.00	0.08	2.08	0.02
Fugitive Dust - Drainage/Utilities/Subgrade				1.00		10.00	0.06	2.08	0.01

Off-Road Equipment Emissions														
Default		Mitigation Option												
Grubbing/Land Clearing	Number of Vehicles	Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e	
Override of Default Number of Vehicles	Program-estimate		Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	1		Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	1		Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	1		Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
User-Defined Off-road Equipment				If non-default vehicles are used, please provide information in "Non-default Off-road Equipment" tab										
Number of Vehicles			Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
0.00			N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
					pounds per day	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					tons per phase	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grading/Excavation		Default Number of Vehicles	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
Override of Default Number of Vehicles	Program-estimate														
				Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00	3			Model Default Tier	Excavators	0.29	3.63	2.98	0.14	0.13	0.01	568.17	0.18	0.01	574.16
				Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00	1			Model Default Tier	Graders	0.54	3.26	5.36	0.30	0.28	0.00	436.30	0.14	0.00	440.88
				Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00				Model Default Tier	Rubber Tired Dozers	1.09	9.04	11.71	0.54	0.50	0.01	935.12	0.30	0.01	944.94
0.00	1			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1			Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00	2			Model Default Tier	Tractors/Loaders/Backhoes	0.47	4.65	4.72	0.32	0.29	0.01	621.43	0.20	0.01	627.97
				Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
User-Defined Off-road Equipment		If non-default vehicles are used, please provide information in "Non-default Off-road Equipment" tab				ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
	Number of Vehicles		Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Grading/Excavation			pounds per day	2.39	20.59	24.78	1.30	1.19	0.03	2,561.01	0.81	0.02		2,587.96
	Grading/Excavation			tons per phase	0.02	0.17	0.21	0.01	0.01	0.00	21.69	0.01	0.00		21.92

Paving	Default		Mitigation Option		Default	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e	
	Number of Vehicles	Override of	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier												Type
	Override of Default Number of Vehicles	Program-estimate														
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2.00						0.01	0.04	0.05	0.00	0.00	0.00	6.69	0.00	0.00	6.73	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
						0.00	0.00	0.00	0.00	0.00	0.00					

Equipment default values for horsepower and hours/day can be overridden in cells D391 through D424 and F391 through F424.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63		8
Air Compressors		78		8
Bore/Drill Rigs		206		8
Cement and Mortar Mixers		9	0.53	8
Concrete/Industrial Saws		81		8
Cranes		226		8
Crawler Tractors		208		8
Crushing/Proc. Equipment		85		8
Excavators		163	4.31	8
Forklifts		89	0.92	8
Generator Sets		84		8
Graders		175	2.82	8
Off-Highway Tractors		123		8
Off-Highway Trucks		400		8
Other Construction Equipment		172		8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		167		8
Pavers		126	1.33	8
Paving Equipment		131	1.33	8
Plate Compactors		8		8
Pressure Washers		13		8
Pumps		84		8
Rollers		81	1.33	8
Rough Terrain Forklifts		100		8
Rubber Tired Dozers		255	2.12	8
Rubber Tired Loaders		200		8
Scrapers		362		8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		254		8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		98	4.00	8
Trenchers		81		8
Welders		46		8

END OF DATA ENTRY SHEET

Road Construction Emissions Model, Version 8.1.0

Daily Emission Estimates for -> Charcot Extension (WEST Roadway)														
Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	2.53	22.67	25.80	11.39	1.39	10.00	3.32	1.24	2.08	0.03	3,408.43	0.83	0.04	3,441.08
Drainage/Utilities/Sub-Grade	1.20	13.92	11.67	10.70	0.70	10.00	2.69	0.61	2.08	0.02	2,421.08	0.58	0.03	2,443.93
Paving	0.82	8.40	8.50	0.52	0.52	0.00	0.45	0.45	0.00	0.02	1,702.21	0.32	0.03	1,718.13
Maximum (pounds/day)	2.53	22.67	25.80	11.39	1.39	10.00	3.32	1.24	2.08	0.03	3,408.43	0.83	0.04	3,441.08
Total (tons/construction project)	0.05	0.47	0.48	0.18	0.03	0.15	0.06	0.02	0.03	0.00	82.03	0.02	0.00	82.81
Notes:	Project Start Year -> 2019													
	Project Length (months) -> 3													
	Total Project Area (acres) -> 2													
	Maximum Area Disturbed/Day (acres) -> 1													
	Water Truck Used? -> Yes													
	Total Material Imported/Exported Volume (yd³/day)		Daily VMT (miles/day)											
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck								
Grubbing/Land Clearing	0	0	0	0	160	40								
Grading/Excavation	324	0	34	0	680	40								
Drainage/Utilities/Sub-Grade	0	0	0	0	560	40								
Paving	0	38	0	60	400	40								
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.														
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.														
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.														
Total Emission Estimates by Phase for -> Charcot Extension (WEST Roadway)														
Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	0.02	0.19	0.22	0.10	0.01	0.08	0.03	0.01	0.02	0.00	28.87	0.01	0.00	26.44
Drainage/Utilities/Sub-Grade	0.01	0.09	0.08	0.07	0.00	0.06	0.02	0.00	0.01	0.00	15.71	0.00	0.00	14.39
Paving	0.02	0.18	0.19	0.01	0.01	0.00	0.01	0.01	0.00	0.00	37.45	0.01	0.00	34.29
Maximum (tons/phase)	0.02	0.19	0.22	0.10	0.01	0.08	0.03	0.01	0.02	0.00	37.45	0.01	0.00	34.29
Total (tons/construction project)	0.05	0.47	0.48	0.18	0.03	0.15	0.06	0.02	0.03	0.00	82.03	0.02	0.00	75.12
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.														
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.														
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.														
The CO2e emissions are reported as metric tons per phase.														

Road Construction Emissions Model		Version 8.1.0		
Data Entry Worksheet				
Note: Required data input sections have a yellow background. Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background. The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types. Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.				
To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.				
				
Input Type				
Project Name	Charcot Extension (EAST 4 LANE Roadway)			
Construction Start Year	2019	Enter a Year between 2014 and 2025 (inclusive)		
Project Type	1	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction		
Project Construction Time	2.50	months		
Working Days per Month	22.00	days (assume 22 if unknown)		
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	2	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the lone formation (Scott Road, Rancho Murietta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murietta)		
Project Length	0.27	miles		
Total Project Area	2.45	acres		
Maximum Area Disturbed/Day	1.00	acre		
Water Trucks Used?	1	1. Yes 2. No		
Material Hauling Quantity Input				
Material Type	Phase	Haul Truck Capacity (yd ³) (assume 20 if unknown)	Import Volume (yd ³ /day)	Export Volume (yd ³ /day)
Soil	Grubbing/Land Clearing			
	Grading/Excavation	20.00		300.00
	Drainage/Utilities/Sub-Grade			
	Paving			
Asphalt	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving	20.00	43.00	
Mitigation Options				
On-road Fleet Emissions Mitigation	No Mitigation	Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer.		
Off-road Equipment Emissions Mitigation	No Mitigation	Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/ceqa/mitigation.shtml). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard		

The remaining sections of this sheet contain areas that can be modified by the user, although those modifications are optional.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing	0.00	0.25		1/1/2019
Grading/Excavation	0.70	1.13		1/1/2019
Drainage/Utilities/Sub-Grade	0.45	0.75		1/23/2019
Paving	1.35	0.38		2/6/2019
Totals (Months)		3		

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions		User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT					
User Input		Miles/Round Trip	Miles/Round Trip	Round Trips/Day	Round Trips/Day	Daily VMT					
Miles/round trip: Grubbing/Land Clearing		2.00	30.00		0	0.00					
Miles/round trip: Grading/Excavation		2.00	30.00		15	30.00					
Miles/round trip: Drainage/Utilities/Sub-Grade		2.00	30.00		0	0.00					
Miles/round trip: Paving		2.00	30.00		0	0.00					
Emission Rates		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2
Grubbing/Land Clearing (grams/mile)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/mile)		0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03
Draining/Utilities/Sub-Grade (grams/mile)		0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03
Paving (grams/mile)		0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03
Hauling Emissions		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2
Pounds per day - Grubbing/Land Clearing		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation		0.01	0.03	0.33	0.01	0.00	0.00	108.95	0.00	0.00	110.06
Tons per const. Period - Grading/Excavation		0.00	0.00	0.00	0.00	0.00	0.00	0.84	0.00	0.00	0.85
Pounds per day - Drainage/Utilities/Sub-Grade		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project		0.00	0.00	0.00	0.00	0.00	0.00	0.84	0.00	0.00	0.85

Note: Asphalt Hauling emission default values can be overridden in cells D87 through D90, and F87 through F90.

Asphalt Hauling Emissions		User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT				
User Input										
Miles/round trip: Grubbing/Land Clearing			30.00		0	0.00				
Miles/round trip: Grading/Excavation			30.00		0	0.00				
Miles/round trip: Drainage/Utilities/Sub-Grade			30.00		0	0.00				
Miles/round trip: Paving			30.00		3	90.00				

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2
Grubbing/Land Clearing (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/mile)	0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03
Draining/Utilities/Sub-Grade (grams/mile)	0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03
Paving (grams/mile)	0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03
Emissions	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.03	0.10	0.99	0.03	0.01	0.00	326.85	0.00	0.01	330.17
Tons per const. Period - Paving	0.00	0.00	0.01	0.00	0.00	0.00	4.85	0.00	0.00	4.90
Total tons per construction project	0.00	0.00	0.01	0.00	0.00	0.00	4.85	0.00	0.00	4.90

Note: Worker commute default values can be overridden in cells D113 through D118.

Worker Commute Emissions		User Override of Worker Commute Default Values		Default Values																	
User Input		Commute Default Values		Calculated		Calculated															
Miles/ one-way trip			20																		
One-way trips/day			2																		
No. of employees: Grubbing/Land Clearing			4			8						160.00									
No. of employees: Grading/Excavation			17			34						680.00									
No. of employees: Drainage/Utilities/Sub-Grade			14			28						560.00									
No. of employees: Paving			10			20						400.00									
Emission Rates		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e										
Grubbing/Land Clearing (grams/mile)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/mile)		0.02	1.19	0.13	0.05	0.02	0.00	381.71	0.01	0.01	383.53										
Draining/Utilities/Sub-Grade (grams/mile)		0.02	1.19	0.13	0.05	0.02	0.00	381.71	0.01	0.01	383.53										
Paving (grams/mile)		0.02	1.19	0.13	0.05	0.02	0.00	381.71	0.01	0.01	383.53										
Grubbing/Land Clearing (grams/trip)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)		1.08	2.86	0.23	0.00	0.00	0.00	85.97	0.01	0.01	89.17										
Draining/Utilities/Sub-Grade (grams/trip)		1.08	2.86	0.23	0.00	0.00	0.00	85.97	0.01	0.01	89.17										
Paving (grams/trip)		1.08	2.86	0.23	0.00	0.00	0.00	85.97	0.01	0.01	89.17										
Emissions		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e										
Pounds per day - Grubbing/Land Clearing		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation		0.12	2.00	0.21	0.07	0.03	0.01	578.68	0.02	0.01	581.65										
Tons per const. Period - Grading/Excavation		0.00	0.02	0.00	0.00	0.00	0.00	4.46	0.00	0.00	4.48										
Pounds per day - Drainage/Utilities/Sub-Grade		0.10	1.65	0.17	0.06	0.02	0.00	476.56	0.01	0.01	479.01										
Tons per const. Period - Drainage/Utilities/Sub-Grade		0.00	0.01	0.00	0.00	0.00	0.00	2.36	0.00	0.00	2.37										
Pounds per day - Paving		0.07	1.18	0.12	0.04	0.02	0.00	340.40	0.01	0.01	342.15										
Tons per const. Period - Paving		0.00	0.02	0.00	0.00	0.00	0.00	5.05	0.00	0.00	5.08										
Total tons per construction project		0.00	0.04	0.00	0.00	0.00	0.00	11.87	0.00	0.00	11.93										

Note: Water Truck default values can be overridden in cells D145 through D148, and F145 through F148.

Water Truck Emissions		User Override of Default # Water Trucks		Program Estimate of Number of Water Trucks		User Override of Truck Miles Traveled/Vehicle/Day		Default Values		Calculated	
User Input		Default # Water Trucks		Number of Water Trucks		Miles Traveled/Vehicle/Day		Miles Traveled/Vehicle/Day		Daily VMT	
Grubbing/Land Clearing - Exhaust		1		1		40.00		40.00		40.00	
Grading/Excavation - Exhaust		1		1		40.00		40.00		40.00	
Drainage/Utilities/Subgrade		1		1		40.00		40.00		40.00	
Paving		1		1		40.00		40.00		40.00	
Emission Rates		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/mile)		0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03
Draining/Utilities/Sub-Grade (grams/mile)		0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03
Paving (grams/mile)		0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03
Emissions		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation		0.01	0.05	0.44	0.01	0.01	0.00	145.27	0.00	0.00	146.74
Tons per const. Period - Grading/Excavation		0.00	0.00	0.00	0.00	0.00	0.00	1.12	0.00	0.00	1.13
Pounds per day - Drainage/Utilities/Sub-Grade		0.01	0.05	0.44	0.01	0.01	0.00	145.27	0.00	0.00	146.74
Tons per const. Period - Drainage/Utilities/Sub-Grade		0.00	0.00	0.00	0.00	0.00	0.00	0.72	0.00	0.00	0.73
Pounds per day - Paving		0.01	0.05	0.44	0.01	0.01	0.00	145.27	0.00	0.00	146.74
Tons per const. Period - Paving		0.00	0.00	0.01	0.00	0.00	0.00	2.16	0.00	0.00	2.18
Total tons per construction project		0.00	0.00	0.01	0.00	0.00	0.00	3.99	0.00	0.00	4.04

Note: Fugitive dust default values can be overridden in cells D171 through D173.

Fugitive Dust		User Override of Max Acreage Disturbed/Day		Default Maximum Acreage/Day		PM10	PM10	PM2.5	PM2.5
						pounds/day	tons/period	pounds/day	tons/period
Fugitive Dust - Grubbing/Land Clearing				0.00		0.00	0.00	0.00	0.00
Fugitive Dust - Grading/Excavation				1.00		10.00	0.08	2.08	0.02
Fugitive Dust - Drainage/Utilities/Subgrade				1.00		10.00	0.05	2.08	0.01

Off-Road Equipment Emissions														
Default		Mitigation Option												
Grubbing/Land Clearing	Number of Vehicles	Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e	
Override of Default Number of Vehicles	Program-estimate		Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	1		Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	1		Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	1		Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
User-Defined Off-road Equipment				If non-default vehicles are used, please provide information in "Non-default Off-road Equipment" tab										
Number of Vehicles			Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
0.00			N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
					pounds per day	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					tons per phase	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grading/Excavation		Default Number of Vehicles	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Override of Default Number of Vehicles	Program-estimate		Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0		Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00	3		Model Default Tier	Excavators	0.27	3.37	2.77	0.13	0.12	0.01	527.30	0.17	0.00	532.86
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00	1		Model Default Tier	Graders	0.54	3.24	5.33	0.30	0.27	0.00	433.20	0.14	0.00	437.76
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2		Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00			Model Default Tier	Rubber Tired Dozers	1.03	8.53	11.05	0.51	0.47	0.01	882.19	0.28	0.01	891.46
0.00	1		Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2		Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00	2		Model Default Tier	Tractors/Loaders/Backhoes	0.47	4.65	4.72	0.32	0.29	0.01	621.43	0.20	0.01	627.97
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
User-Defined Off-road Equipment		If non-default vehicles are used, please provide information in "Non-default Off-road Equipment" tab			ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
	Number of Vehicles		Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Grading/Excavation			pounds per day	2.31	19.79	23.87	1.26	1.16	0.02	2,464.11	0.78	0.02	2,490.05
	Grading/Excavation			tons per phase	0.02	0.15	0.18	0.01	0.01	0.00	18.97	0.01	0.00	19.17

Paving	Default		Mitigation Option		Default	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e	
	Number of Vehicles	Override of	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier												Type
	Override of Default Number of Vehicles	Program-estimate														
					Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00					Model Default Tier	Cement and Mortar Mixers	0.01	0.04	0.05	0.00	0.00	6.69	0.00	0.00	6.73	0.00
					Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00		1			Model Default Tier	Pavers	0.10	0.98	1.06	0.05	0.05	0.00	157.91	0.05	0.00	159.58
2.00		1			Model Default Tier	Paving Equipment	0.07	0.88	0.78	0.04	0.04	0.00	140.09	0.04	0.00	141.57
					Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00		3			Model Default Tier	Rollers	0.08	0.68	0.79	0.05	0.05	0.00	92.03	0.03	0.00	93.00
					Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		1			Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00		2			Model Default Tier	Tractors/Loaders/Backhoes	0.47	4.65	4.72	0.32	0.29	0.01	621.43	0.20	0.01	627.97
					Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
					Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
User-Defined Off-road Equipment																
Number of Vehicles		If non-default vehicles are used, please provide information in "Non-default Off-road Equipment" tab				ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e	
		Equipment Tier				Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	
0.00				N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00				N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00				N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00				N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00				N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00				N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00				N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Paving						pounds per day	0.73	7.23	7.41	0.46	0.42	0.01	1,018.15	0.32	0.01	1,028.84
Paving						tons per phase	0.01	0.11	0.11	0.01	0.01	0.00	15.12	0.00	0.00	15.28
Total Emissions all Phases (tons per construction period) >=							0.03	0.32	0.35	0.02	0.02	0.00	42.57	0.01	0.00	43.02

Equipment default values for horsepower and hours/day can be overridden in cells D391 through D424 and F391 through F424.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63		8
Air Compressors		78		8
Bore/Drill Rigs		206		8
Cement and Mortar Mixers		9	0.53	8
Concrete/Industrial Saws		81		8
Cranes		226		8
Crawler Tractors		208		8
Crushing/Proc. Equipment		85		8
Excavators		163	4.00	8
Forklifts		89	0.80	8
Generator Sets		84		8
Graders		175	2.80	8
Off-Highway Tractors		123		8
Off-Highway Trucks		400		8
Other Construction Equipment		172		8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		167		8
Pavers		126	1.40	8
Paving Equipment		131	1.40	8
Plate Compactors		8		8
Pressure Washers		13		8
Pumps		84		8
Rollers		81	1.40	8
Rough Terrain Forklifts		100		8
Rubber Tired Dozers		255	2.00	8
Rubber Tired Loaders		200		8
Scrapers		362		8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		254		8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		98	4.00	8
Trenchers		81		8
Welders		46		8

END OF DATA ENTRY SHEET

Road Construction Emissions Model, Version 8.1.0

Daily Emission Estimates for -> Charcot Extension (EAST 4 LANE Roadway)														
Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	PM10 (lbs/day)	Exhaust (lbs/day)	Fugitive Dust (lbs/day)	PM2.5 (lbs/day)	Exhaust (lbs/day)	Fugitive Dust (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	2.45	21.87	24.84	11.35	1.35	10.00	3.28	1.20	2.08	0.03	3,297.01	0.80	0.04	3,328.49
Drainage/Utilities/Sub-Grade	1.16	13.36	11.20	10.68	0.68	10.00	2.67	0.59	2.08	0.02	2,334.81	0.55	0.03	2,356.75
Paving	0.84	8.56	8.96	0.54	0.54	0.00	0.46	0.46	0.00	0.02	1,830.66	0.33	0.03	1,847.90
Maximum (pounds/day)	2.45	21.87	24.84	11.35	1.35	10.00	3.28	1.20	2.08	0.03	3,297.01	0.80	0.04	3,328.49
Total (tons/construction project)	0.04	0.36	0.38	0.15	0.02	0.13	0.05	0.02	0.03	0.00	64.13	0.01	0.00	64.74
Notes:	Project Start Year -> 2019													
	Project Length (months) -> 3													
	Total Project Area (acres) -> 2													
	Maximum Area Disturbed/Day (acres) -> 1													
	Water Truck Used? -> Yes													
	Total Material Imported/Exported Volume (yd³/day)		Daily VMT (miles/day)											
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck								
Grubbing/Land Clearing	0	0	0	0	160	40								
Grading/Excavation	300	0	30	0	680	40								
Drainage/Utilities/Sub-Grade	0	0	0	0	560	40								
Paving	0	43	0	90	400	40								
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.														
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.														
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1, 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.														
Total Emission Estimates by Phase for -> Charcot Extension (EAST 4 LANE Roadway)														
Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	PM10 (tons/phase)	PM10 (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	PM2.5 (tons/phase)	PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	0.02	0.17	0.19	0.09	0.01	0.08	0.03	0.01	0.02	0.00	25.39	0.01	0.00	23.25
Drainage/Utilities/Sub-Grade	0.01	0.07	0.06	0.05	0.00	0.05	0.01	0.00	0.01	0.00	11.56	0.00	0.00	10.58
Paving	0.01	0.13	0.13	0.01	0.01	0.00	0.01	0.01	0.00	0.00	27.19	0.00	0.00	24.89
Maximum (tons/phase)	0.02	0.17	0.19	0.09	0.01	0.08	0.03	0.01	0.02	0.00	27.19	0.01	0.00	24.89
Total (tons/construction project)	0.04	0.36	0.38	0.15	0.02	0.13	0.05	0.02	0.03	0.00	64.13	0.01	0.00	58.73
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.														
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.														
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1, 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.														
The CO2e emissions are reported as metric tons per phase.														

Road Construction Emissions Model		Version 8.1.0		
Data Entry Worksheet				
Note: Required data input sections have a yellow background. Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background. The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types. Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.				
To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.				
				
Input Type				
Project Name	Charcot Extension (EAST 3 LANE Roadway)			
Construction Start Year	2019	Enter a Year between 2014 and 2025 (inclusive)		
Project Type	1	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction		
Project Construction Time	2.27	months		
Working Days per Month	22.00	days (assume 22 if unknown)		
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	2	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the lone formation (Scott Road, Rancho Murieta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murieta)		
Project Length	0.27	miles		
Total Project Area	2.45	acres		
Maximum Area Disturbed/Day	1.00	acre		
Water Trucks Used?	1	1. Yes 2. No		
Material Hauling Quantity Input				
Material Type	Phase	Haul Truck Capacity (yd ³) (assume 20 if unknown)	Import Volume (yd ³ /day)	Export Volume (yd ³ /day)
Soil	Grubbing/Land Clearing			
	Grading/Excavation	20.00		376.90
	Drainage/Utilities/Sub-Grade			
	Paving			
Asphalt	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving	20.00	53.40	
Mitigation Options				
On-road Fleet Emissions Mitigation	No Mitigation	Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer.		
Off-road Equipment Emissions Mitigation	No Mitigation	Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/ceqa/mitigation.shtml). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard		

The remaining sections of this sheet contain areas that can be modified by the user, although those modifications are optional.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing	0.00	0.23		1/1/2019
Grading/Excavation	0.59	1.02		1/1/2019
Drainage/Utilities/Sub-Grade	0.41	0.68		1/19/2019
Paving	1.27	0.34		2/1/2019
Totals (Months)		2		

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions		User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT				
User Input										
Miles/round trip: Grubbing/Land Clearing		2.00	30.00		0	0.00				
Miles/round trip: Grading/Excavation		2.00	30.00		19	38.00				
Miles/round trip: Drainage/Utilities/Sub-Grade		2.00	30.00		0	0.00				
Miles/round trip: Paving		2.00	30.00		0	0.00				
Emission Rates										
	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2
Grubbing/Land Clearing (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/mile)	0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03
Drainage/Utilities/Sub-Grade (grams/mile)	0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03
Paving (grams/mile)	0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03
Hauling Emissions										
	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.01	0.04	0.42	0.01	0.01	0.00	138.00	0.00	0.00	139.40
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.90	0.00	0.00	0.90
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project	0.00	0.00	0.00	0.00	0.00	0.00	0.90	0.00	0.00	0.90

Note: Asphalt Hauling emission default values can be overridden in cells D87 through D90, and F87 through F90.

Asphalt Hauling Emissions		User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT				
User Input										
Miles/round trip: Grubbing/Land Clearing			30.00		0	0.00				
Miles/round trip: Grading/Excavation			30.00		0	0.00				
Miles/round trip: Drainage/Utilities/Sub-Grade			30.00		0	0.00				
Miles/round trip: Paving			30.00		3	90.00				

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2
Grubbing/Land Clearing (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/mile)	0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.00
Draining/Utilities/Sub-Grade (grams/mile)	0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.00
Paving (grams/mile)	0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.00
Emissions	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	0.03	0.10	0.99	0.03	0.01	0.00	326.85	0.00	0.01	330.17
Tons per const. Period - Paving	0.00	0.00	0.01	0.00	0.00	0.00	4.57	0.00	0.00	4.61
Total tons per construction project	0.00	0.00	0.01	0.00	0.00	0.00	4.57	0.00	0.00	4.61

Note: Worker commute default values can be overridden in cells D113 through D118.

Worker Commute Emissions		User Override of Worker Commute Default Values		Default Values									
User Input													
Miles/ one-way trip			20		Calculated		Calculated						
One-way trips/day			2		Daily Trips		Daily VMT						
No. of employees: Grubbing/Land Clearing			4		8		160.00						
No. of employees: Grading/Excavation			17		34		680.00						
No. of employees: Drainage/Utilities/Sub-Grade			14		28		560.00						
No. of employees: Paving			10		20		400.00						
Emission Rates		ROG	CO		NOx		PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)		0.00	0.00		0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/mile)		0.02	1.19		0.13		0.05	0.02	0.00	381.71	0.01	0.01	383.53
Draining/Utilities/Sub-Grade (grams/mile)		0.02	1.19		0.13		0.05	0.02	0.00	381.71	0.01	0.01	383.53
Paving (grams/mile)		0.02	1.19		0.13		0.05	0.02	0.00	381.71	0.01	0.01	383.53
Grubbing/Land Clearing (grams/trip)		0.00	0.00		0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)		1.08	2.86		0.23		0.00	0.00	0.00	85.97	0.01	0.01	89.17
Draining/Utilities/Sub-Grade (grams/trip)		1.08	2.86		0.23		0.00	0.00	0.00	85.97	0.01	0.01	89.17
Paving (grams/trip)		1.08	2.86		0.23		0.00	0.00	0.00	85.97	0.01	0.01	89.17
Emissions		ROG	CO		NOx		PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing		0.00	0.00		0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing		0.00	0.00		0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation		0.12	2.00		0.21		0.07	0.03	0.01	578.68	0.02	0.01	581.65
Tons per const. Period - Grading/Excavation		0.00	0.01		0.00		0.00	0.00	0.00	3.76	0.00	0.00	3.77
Pounds per day - Drainage/Utilities/Sub-Grade		0.10	1.65		0.17		0.06	0.02	0.00	476.56	0.01	0.01	479.01
Tons per const. Period - Drainage/Utilities/Sub-Grade		0.00	0.01		0.00		0.00	0.00	0.00	2.15	0.00	0.00	2.16
Pounds per day - Paving		0.07	1.18		0.12		0.04	0.02	0.00	340.40	0.01	0.01	342.15
Tons per const. Period - Paving		0.00	0.02		0.00		0.00	0.00	0.00	4.76	0.00	0.00	4.78
Total tons per construction project		0.00	0.04		0.00		0.00	0.00	0.00	10.66	0.00	0.00	10.72

Note: Water Truck default values can be overridden in cells D145 through D148, and F145 through F148.

Water Truck Emissions		User Override of Default # Water Trucks		Program Estimate of Number of Water Trucks		User Override of Truck Miles Traveled/Vehicle/Day		Default Values		Calculated	
User Input		Default # Water Trucks		Program Estimate of Number of Water Trucks		User Override of Truck Miles Traveled/Vehicle/Day		Default Values		Calculated	
Grubbing/Land Clearing - Exhaust		1		1		40.00		40.00		40.00	
Grading/Excavation - Exhaust		1		1		40.00		40.00		40.00	
Drainage/Utilities/Subgrade		1		1		40.00		40.00		40.00	
Paving		1		1		40.00		40.00		40.00	
Emission Rates		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/mile)		0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03
Draining/Utilities/Sub-Grade (grams/mile)		0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03
Paving (grams/mile)		0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03
Emissions		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation		0.01	0.05	0.44	0.01	0.01	0.00	145.27	0.00	0.00	146.74
Tons per const. Period - Grading/Excavation		0.00	0.00	0.00	0.00	0.00	0.00	0.94	0.00	0.00	0.95
Pounds per day - Drainage/Utilities/Sub-Grade		0.01	0.05	0.44	0.01	0.01	0.00	145.27	0.00	0.00	146.74
Tons per const. Period - Drainage/Utilities/Sub-Grade		0.00	0.00	0.00	0.00	0.00	0.00	0.66	0.00	0.00	0.66
Pounds per day - Paving		0.01	0.05	0.44	0.01	0.01	0.00	145.27	0.00	0.00	146.74
Tons per const. Period - Paving		0.00	0.00	0.01	0.00	0.00	0.00	2.03	0.00	0.00	2.05
Total tons per construction project		0.00	0.00	0.01	0.00	0.00	0.00	3.63	0.00	0.00	3.66

Note: Fugitive dust default values can be overridden in cells D171 through D173.

Fugitive Dust		User Override of Max Acreage Disturbed/Day		Default Maximum Acreage/Day		PM10	PM10	PM2.5	PM2.5
						pounds/day	tons/period	pounds/day	tons/period
Fugitive Dust - Grubbing/Land Clearing				0.00		0.00	0.00	0.00	0.00
Fugitive Dust - Grading/Excavation				1.00		10.00	0.06	2.08	0.01
Fugitive Dust - Drainage/Utilities/Subgrade				1.00		10.00	0.05	2.08	0.01

Off-Road Equipment Emissions														
Default		Mitigation Option												
Grubbing/Land Clearing	Number of Vehicles	Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e	
Override of Default Number of Vehicles	Program-estimate		Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	1		Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	1		Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	1		Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
User-Defined Off-road Equipment				If non-default vehicles are used, please provide information in "Non-default Off-road Equipment" tab										
Number of Vehicles			Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
0.00			N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing					pounds per day	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grubbing/Land Clearing					tons per phase	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grading/Excavation		Default Number of Vehicles	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Override of Default Number of Vehicles	Program-estimate		Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0		Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00	3		Model Default Tier	Excavators	0.26	3.27	2.69	0.13	0.12	0.01	512.80	0.16	0.00	518.21
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00	1		Model Default Tier	Graders	0.53	3.20	5.27	0.29	0.27	0.00	428.56	0.14	0.00	433.07
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2		Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00			Model Default Tier	Rubber Tired Dozers	0.95	7.89	10.22	0.47	0.43	0.01	816.02	0.26	0.01	824.60
0.00	1		Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2		Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00	2		Model Default Tier	Tractors/Loaders/Backhoes	0.46	4.52	4.59	0.31	0.28	0.01	604.34	0.19	0.01	610.70
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
User-Defined Off-road Equipment														
If non-default vehicles are used, please provide information in "Non-default Off-road Equipment" tab														
Number of Vehicles			Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation					pounds per day	2.20	18.90	22.78	1.20	1.11	0.02	2,361.72	0.75	0.02
Grading/Excavation					tons per phase	0.01	0.12	0.15	0.01	0.01	0.00	15.33	0.00	0.00

Drainage/Utilities/Subgrade	Default		Mitigation Option		Default	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
	Number of Vehicles	Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default												
Override of Default Number of Vehicles	Program-estimate		Equipment Tier		pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00			Model Default Tier	Cement and Mortar Mixers	0.01	0.04	0.05	0.00	0.00	0.00	7.20	0.00	0.00	7.24	0.00
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00			Model Default Tier	Excavators	0.52	6.55	5.38	0.26	0.24	0.01	1,025.60	0.32	0.01	1,036.42	0.00
2.00			Model Default Tier	Forklifts	0.04	0.27	0.32	0.02	0.02	0.00	33.67	0.01	0.00	34.02	0.00
0.00	1		Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2		Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1		Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00	2		Model Default Tier	Tractors/Loaders/Backhoes	0.46	4.52	4.59	0.31	0.28	0.01	604.34	0.19	0.01	610.70	0.00
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
User-Defined Off-road Equipment					If non-default vehicles are used, please provide information in "Non-default Off-road Equipment" tab										
	Number of Vehicles		Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e	
	0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00		N/A	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Drainage/Utilities/Sub-Grade				pounds per day	1.02	11.38	10.34	0.59	0.55	0.02	1,670.80	0.53	0.01	1,688.38
	Drainage/Utilities/Sub-Grade				tons per phase	0.00	0.05	0.05	0.00	0.00	0.00	7.54	0.00	0.00	7.61

Paving	Default		Mitigation Option		Default	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e		
	Number of Vehicles	Override of	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier												Type	
	Override of Default Number of Vehicles	Program-estimate															pounds/day
					Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2.00					Model Default Tier	Cement and Mortar Mixers	0.01	0.04	0.05	0.00	0.00	7.20	0.00	0.00	7.24	0.00	
					Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2.00		1			Model Default Tier	Pavers	0.09	0.91	0.98	0.05	0.04	0.00	145.50	0.05	0.00	147.04	
2.00		1			Model Default Tier	Paving Equipment	0.07	0.81	0.72	0.04	0.03	0.00	129.09	0.04	0.00	130.45	
					Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2.00		3			Model Default Tier	Rollers	0.07	0.62	0.73	0.05	0.04	0.00	84.79	0.03	0.00	85.69	
					Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		1			Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4.00		2			Model Default Tier	Tractors/Loaders/Backhoes	0.46	4.52	4.59	0.31	0.28	0.01	604.34	0.19	0.01	610.70	
					Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
					Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
User-Defined Off-road Equipment																	
If non-default vehicles are used, please provide information in "Non-default Off-road Equipment" tab						ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e		
Number of Vehicles						Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	
0.00						N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00						N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00						N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00						N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00						N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00						N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00						N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00						N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Paving							pounds per day	0.70	6.91	7.08	0.44	0.41	0.01	970.92	0.31	0.01	981.11
Paving							tons per phase	0.01	0.10	0.10	0.01	0.01	0.00	13.56	0.00	0.00	13.71
Total Emissions all Phases (tons per construction period) >=								0.03	0.27	0.29	0.02	0.02	0.00	36.43	0.01	0.00	36.81

Equipment default values for horsepower and hours/day can be overridden in cells D391 through D424 and F391 through F424.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63		8
Air Compressors		78		8
Bore/Drill Rigs		206		8
Cement and Mortar Mixers		9	0.57	8
Concrete/Industrial Saws		81		8
Cranes		226		8
Crawler Tractors		208		8
Crushing/Proc. Equipment		85		8
Excavators		163	3.89	8
Forklifts		89	0.89	8
Generator Sets		84		8
Graders		175	2.77	8
Off-Highway Tractors		123		8
Off-Highway Trucks		400		8
Other Construction Equipment		172		8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		167		8
Pavers		126	1.29	8
Paving Equipment		131	1.29	8
Plate Compactors		8		8
Pressure Washers		13		8
Pumps		84		8
Rollers		81	1.29	8
Rough Terrain Forklifts		100		8
Rubber Tired Dozers		255	1.85	8
Rubber Tired Loaders		200		8
Scrapers		362		8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		254		8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		98	3.89	8
Trenchers		81		8
Welders		46		8

END OF DATA ENTRY SHEET

Road Construction Emissions Model, Version 8.1.0

Daily Emission Estimates for -> Charcot Extension (EAST 3 LANE Roadway)														
Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	2.34	20.98	23.84	11.29	1.29	10.00	3.23	1.15	2.08	0.03	3,223.67	0.76	0.04	3,254.37
Drainage/Utilities/Sub-Grade	1.13	13.07	10.95	10.66	0.66	10.00	2.66	0.58	2.08	0.02	2,292.63	0.54	0.03	2,314.12
Paving	0.81	8.23	8.62	0.52	0.52	0.00	0.44	0.44	0.00	0.02	1,783.43	0.32	0.03	1,800.17
Maximum (pounds/day)	2.34	20.98	23.84	11.29	1.29	10.00	3.23	1.15	2.08	0.03	3,223.67	0.76	0.04	3,254.37
Total (tons/construction project)	0.03	0.31	0.32	0.13	0.02	0.11	0.04	0.02	0.02	0.00	56.18	0.01	0.00	56.71
Notes:	Project Start Year -> 2019													
	Project Length (months) -> 2													
	Total Project Area (acres) -> 2													
	Maximum Area Disturbed/Day (acres) -> 1													
	Water Truck Used? -> Yes													
	Total Material Imported/Exported Volume (yd³/day)		Daily VMT (miles/day)											
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck								
Grubbing/Land Clearing	0	0	0	0	160	40								
Grading/Excavation	377	0	38	0	680	40								
Drainage/Utilities/Sub-Grade	0	0	0	0	560	40								
Paving	0	53	0	90	400	40								
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.														
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.														
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1, 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.														
Total Emission Estimates by Phase for -> Charcot Extension (EAST 3 LANE Roadway)														
Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	Total PM10 (tons/phase)	Exhaust PM10 (tons/phase)	Fugitive Dust PM10 (tons/phase)	Total PM2.5 (tons/phase)	Exhaust PM2.5 (tons/phase)	Fugitive Dust PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	0.02	0.14	0.15	0.07	0.01	0.06	0.02	0.01	0.01	0.00	20.92	0.00	0.00	19.16
Drainage/Utilities/Sub-Grade	0.01	0.06	0.05	0.05	0.00	0.05	0.01	0.00	0.01	0.00	10.34	0.00	0.00	9.47
Paving	0.01	0.12	0.12	0.01	0.01	0.00	0.01	0.01	0.00	0.00	24.91	0.00	0.00	22.81
Maximum (tons/phase)	0.02	0.14	0.15	0.07	0.01	0.06	0.02	0.01	0.01	0.00	24.91	0.00	0.00	22.81
Total (tons/construction project)	0.03	0.31	0.32	0.13	0.02	0.11	0.04	0.02	0.02	0.00	56.18	0.01	0.00	51.44
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.														
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.														
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1, 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.														
The CO2e emissions are reported as metric tons per phase.														

Road Construction Emissions Model		Version 8.1.0		
Data Entry Worksheet				
Note: Required data input sections have a yellow background. Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background. The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types. Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.				
To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.				
				
Input Type				
Project Name	Charcot Extension bridge)			
Construction Start Year	2019	Enter a Year between 2014 and 2025 (inclusive)		
Project Type	3	1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction		
Project Construction Time	10.00	months		
Working Days per Month	22.00	days (assume 22 if unknown)		
Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22)	2	1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the lone formation (Scott Road, Rancho Murietta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murietta)		
Project Length	0.09	miles		
Total Project Area	1.00	acre		
Maximum Area Disturbed/Day	1.00	acre		
Water Trucks Used?	2	1. Yes 2. No		
Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County. http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries				
Material Hauling Quantity Input				
Material Type	Phase	Haul Truck Capacity (yd ³) (assume 20 if unknown)	Import Volume (yd ³ /day)	Export Volume (yd ³ /day)
Soil	Grubbing/Land Clearing			
	Grading/Excavation	20.00		17.00
	Drainage/Utilities/Sub-Grade		100.00	
	Paving			
Asphalt	Grubbing/Land Clearing			
	Grading/Excavation			
	Drainage/Utilities/Sub-Grade			
	Paving	20.00	4240.00	
Mitigation Options				
On-road Fleet Emissions Mitigation	No Mitigation	Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer		
Off-road Equipment Emissions Mitigation	No Mitigation	Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/ceqa/mitigation.shtml). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard		

The remaining sections of this sheet contain areas that can be modified by the user, although those modifications are optional.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing		1.00		1/1/2019
Grading/Excavation		4.50		2/1/2019
Drainage/Utilities/Sub-Grade		3.00		6/18/2019
Paving		1.50		9/18/2019
Totals (Months)	10			

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions		User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT					
User Input											
Miles/round trip: Grubbing/Land Clearing		20.00	30.00		0	0.00					
Miles/round trip: Grading/Excavation		20.00	30.00		1	20.00					
Miles/round trip: Drainage/Utilities/Sub-Grade		20.00	30.00		0	0.00					
Miles/round trip: Paving		20.00	30.00		0	0.00					
Emission Rates		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)		0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03
Grading/Excavation (grams/mile)		0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03
Drainage/Utilities/Sub-Grade (grams/mile)		0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03
Paving (grams/mile)		0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03
Hauling Emissions		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation		0.01	0.02	0.22	0.01	0.00	0.00	72.63	0.00	0.00	73.37
Tons per const. Period - Grading/Excavation		0.00	0.00	0.01	0.00	0.00	0.00	3.60	0.00	0.00	3.63
Pounds per day - Drainage/Utilities/Sub-Grade		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project		0.00	0.00	0.01	0.00	0.00	0.00	3.60	0.00	0.00	3.63

Note: Asphalt Hauling emission default values can be overridden in cells D87 through D90, and F87 through F90.

Asphalt Hauling Emissions		User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
User Input						
Miles/round trip: Grubbing/Land Clearing		30.00		0	0.00	
Miles/round trip: Grading/Excavation		30.00		0	0.00	
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		0	0.00	
Miles/round trip: Paving		30.00		212	6360.00	

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03
Grading/Excavation (grams/mile)	0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03
Draining/Utilities/Sub-Grade (grams/mile)	0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03
Paving (grams/mile)	0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03
Emissions	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	1.88	7.34	69.67	1.83	0.94	0.22	23,097.31	0.09	0.78	23,331.98
Tons per const. Period - Paving	0.03	0.12	1.15	0.03	0.02	0.00	381.11	0.00	0.01	384.98
Total tons per construction project	0.03	0.12	1.15	0.03	0.02	0.00	381.11	0.00	0.01	384.98

Note: Worker commute default values can be overridden in cells D113 through D118.

Worker Commute Emissions		User Override of Worker Commute Default Values		Default Values		Calculated		Calculated					
User Input		Default Values		Calculated		Daily Trips		Daily VMT					
Miles/ one-way trip		20											
One-way trips/day		2											
No. of employees: Grubbing/Land Clearing		5		10		200.00							
No. of employees: Grading/Excavation		28		56		1,120.00							
No. of employees: Drainage/Utilities/Sub-Grade		18		36		720.00							
No. of employees: Paving		8		16		320.00							
Emission Rates		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e		
Grubbing/Land Clearing (grams/mile)		0.02	1.19	0.13	0.05	0.02	0.00	381.71	0.01	0.01	383.53		
Grading/Excavation (grams/mile)		0.02	1.19	0.13	0.05	0.02	0.00	381.71	0.01	0.01	383.53		
Draining/Utilities/Sub-Grade (grams/mile)		0.02	1.19	0.13	0.05	0.02	0.00	381.71	0.01	0.01	383.53		
Paving (grams/mile)		0.02	1.19	0.13	0.05	0.02	0.00	381.71	0.01	0.01	383.53		
Grubbing/Land Clearing (grams/trip)		1.08	2.86	0.23	0.00	0.00	0.00	85.97	0.01	0.01	89.17		
Grading/Excavation (grams/trip)		1.08	2.86	0.23	0.00	0.00	0.00	85.97	0.01	0.01	89.17		
Draining/Utilities/Sub-Grade (grams/trip)		1.08	2.86	0.23	0.00	0.00	0.00	85.97	0.01	0.01	89.17		
Paving (grams/trip)		1.08	2.86	0.23	0.00	0.00	0.00	85.97	0.01	0.01	89.17		
Emissions		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e		
Pounds per day - Grubbing/Land Clearing		0.03	0.59	0.06	0.02	0.01	0.00	170.20	0.00	0.00	171.07		
Tons per const. Period - Grubbing/Land Clearing		0.00	0.01	0.00	0.00	0.00	0.00	1.87	0.00	0.00	1.88		
Pounds per day - Grading/Excavation		0.19	3.29	0.34	0.12	0.05	0.01	953.12	0.03	0.01	958.01		
Tons per const. Period - Grading/Excavation		0.01	0.16	0.02	0.01	0.00	0.00	47.18	0.00	0.00	47.42		
Pounds per day - Drainage/Utilities/Sub-Grade		0.12	2.12	0.22	0.07	0.03	0.01	612.72	0.02	0.01	615.96		
Tons per const. Period - Drainage/Utilities/Sub-Grade		0.00	0.07	0.01	0.00	0.00	0.00	20.22	0.00	0.00	20.32		
Pounds per day - Paving		0.06	0.94	0.10	0.03	0.01	0.00	272.32	0.01	0.00	273.72		
Tons per const. Period - Paving		0.00	0.02	0.00	0.00	0.00	0.00	4.49	0.00	0.00	4.52		
Total tons per construction project		0.01	0.25	0.03	0.01	0.00	0.00	73.76	0.00	0.00	74.14		

Note: Water Truck default values can be overridden in cells D145 through D148, and F145 through F148.

Water Truck Emissions		User Override of Default # Water Trucks		Program Estimate of Number of Water Trucks		User Override of Truck Miles Traveled/Vehicle/Day		Default Values Miles Traveled/Vehicle/Day		Calculated Daily VMT			
User Input													
Grubbing/Land Clearing - Exhaust		0				40.00		0.00					
Grading/Excavation - Exhaust		0				40.00		0.00					
Drainage/Utilities/Subgrade		0				40.00		0.00					
Paving		0				40.00		0.00					
Emission Rates		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e		
Grubbing/Land Clearing (grams/mile)		0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03		
Grading/Excavation (grams/mile)		0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03		
Draining/Utilities/Sub-Grade (grams/mile)		0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03		
Paving (grams/mile)		0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03		
Emissions		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e		
Pounds per day - Grubbing/Land Clearing		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Tons per const. Period - Grubbing/Land Clearing		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Pounds per day - Grading/Excavation		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Tons per const. Period - Grading/Excavation		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Pounds per day - Drainage/Utilities/Sub-Grade		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Tons per const. Period - Drainage/Utilities/Sub-Grade		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Pounds per day - Paving		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Tons per const. Period - Paving		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Total tons per construction project		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		

Note: Fugitive dust default values can be overridden in cells D171 through D173.

Fugitive Dust		User Override of Max Acreage Disturbed/Day		Default Maximum Acreage/Day		PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing		1.00				20.00	0.22	4.16	0.05
Fugitive Dust - Grading/Excavation		1.00				20.00	0.99	4.16	0.21
Fugitive Dust - Drainage/Utilities/Subgrade		1.00				20.00	0.66	4.16	0.14

Off-Road Equipment Emissions														
Grubbing/Land Clearing	Default	Mitigation Option		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e	
	Number of Vehicles	Override of	Default											
		Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)												
Override of Default Number of Vehicles	Program-estimate		Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	1		Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	2		Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	1		Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1.00			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Tractors/Loaders/Backhoes	0.09	0.87	0.89	0.06	0.05	0.00	116.52	0.04	0.00	117.74
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
User-Defined Off-road Equipment														
If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab														
Number of Vehicles			Equipment Tier	Type	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
0.00			N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Grubbing/Land Clearing			pounds per day	0.09	0.87	0.89	0.06	0.05	0.00	116.52	0.04	0.00	117.74
	Grubbing/Land Clearing			tons per phase	0.00	0.01	0.01	0.00	0.00	0.00	1.28	0.00	0.00	1.30

Grading/Excavation	Default		Mitigation Option		Default	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e	
	Number of Vehicles	Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier													
			Type													
Override of Default Number of Vehicles		Program-estimate				pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	
				Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	1			Model Default Tier	Cranes	0.49	2.24	5.88	0.25	0.23	0.01	558.85	0.18	0.00	564.74	
0.00	2			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	4			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	2			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	3			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	3			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	4			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	1			Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	2			Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
				Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
User-Defined Off-road Equipment																
Number of Vehicles		If non-default vehicles are used, please provide information in 'Non-default Off-road Equipment' tab				ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e	
		Equipment Tier				Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	
0.00		N/A				0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A				0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A				0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A				0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A				0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A				0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A				0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00		N/A				0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Grading/Excavation						pounds per day	0.49	2.24	5.88	0.25	0.23	0.01	558.85	0.18	0.00	564.74
Grading/Excavation						tons per phase	0.02	0.11	0.29	0.01	0.01	0.00	27.66	0.01	0.00	27.95

Data Entry Worksheet

Paving	Default		Mitigation Option		Default	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
	Number of Vehicles	Override of													
	Override of Default Number of Vehicles	Program-estimate	Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier											
				Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1			Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2			Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
User-Defined Off-road Equipment						ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
If non-default vehicles are used, please provide information in "Non-default Off-road Equipment" tab						pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
Number of Vehicles		Equipment Tier		Type											
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A			0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving				pounds per day		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving				tons per phase		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Emissions all Phases (tons per construction period) >=						0.08	0.53	0.83	0.04	0.04	0.00	106.39	0.02	0.00	107.24

Equipment default values for horsepower and hours/day can be overridden in cells D391 through D424 and F391 through F424.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63	1.00	8
Air Compressors		78	1.00	8
Bore/Drill Rigs		206	2.00	8
Cement and Mortar Mixers		9		8
Concrete/Industrial Saws		81	2.00	8
Cranes		226		8
Crawler Tractors		208		8
Crushing/Proc. Equipment		85		8
Excavators		163		8
Forklifts		89		8
Generator Sets		84	7.00	8
Graders		175		8
Off-Highway Tractors		123		8
Off-Highway Trucks		400		8
Other Construction Equipment		172		8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		167		8
Pavers		126		8
Paving Equipment		131		8
Plate Compactors		8		8
Pressure Washers		13		8
Pumps		84		8
Rollers		81		8
Rough Terrain Forklifts		100		8
Rubber Tired Dozers		255		8
Rubber Tired Loaders		200		8
Scrapers		362		8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		254		8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		98	3.00	8
Trenchers		81		8
Welders		46	1.00	8

END OF DATA ENTRY SHEET

Road Construction Emissions Model, Version 8.1.0

Daily Emission Estimates for -> Charcot Extension bridge)														
Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	PM10 (lbs/day)	Exhaust (lbs/day)	Fugitive Dust (lbs/day)	PM2.5 (lbs/day)	Exhaust (lbs/day)	Fugitive Dust (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	0.12	1.46	0.95	20.08	0.08	20.00	4.22	0.06	4.16	0.00	286.72	0.04	0.00	288.82
Grading/Excavation	0.69	5.56	6.44	20.37	0.37	20.00	4.44	0.28	4.16	0.02	1,584.60	0.20	0.02	1,596.12
Drainage/Utilities/Sub-Grade	1.74	14.63	16.32	20.88	0.88	20.00	4.97	0.81	4.16	0.03	2,959.45	0.46	0.03	2,979.35
Paving	1.94	8.28	69.77	1.87	1.87	0.00	0.95	0.95	0.00	0.22	23,369.63	0.09	0.78	23,605.70
Maximum (pounds/day)	1.94	14.63	69.77	20.88	1.87	20.00	4.97	0.95	4.16	0.22	23,369.63	0.46	0.78	23,605.70
Total (tons/construction project)	0.13	0.91	2.02	1.95	0.08	1.87	0.45	0.06	0.39	0.01	564.85	0.03	0.01	570.00
Notes: Project Start Year -> 2019														
Project Length (months) -> 10														
Total Project Area (acres) -> 1														
Maximum Area Disturbed/Day (acres) -> 1														
Water Truck Used? -> No														
Total Material Imported/Exported Volume (yd³/day)														
Daily VMT (miles/day)														
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck								
Grubbing/Land Clearing	0	0	0	0	200	0								
Grading/Excavation	17	0	20	0	1,120	0								
Drainage/Utilities/Sub-Grade	100	0	0	0	720	0								
Paving	0	4240	0	6,360	320	0								
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.														
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.														
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1, 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.														
Total Emission Estimates by Phase for -> Charcot Extension bridge)														
Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	PM10 (tons/phase)	Exhaust (tons/phase)	Fugitive Dust (tons/phase)	PM2.5 (tons/phase)	Exhaust (tons/phase)	Fugitive Dust (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.00	0.02	0.01	0.22	0.00	0.22	0.05	0.00	0.05	0.00	3.15	0.00	0.00	2.88
Grading/Excavation	0.03	0.28	0.32	1.01	0.02	0.99	0.22	0.01	0.21	0.00	78.44	0.01	0.00	71.68
Drainage/Utilities/Sub-Grade	0.06	0.48	0.54	0.69	0.03	0.66	0.16	0.03	0.14	0.00	97.66	0.02	0.00	89.19
Paving	0.03	0.14	1.15	0.03	0.03	0.00	0.02	0.02	0.00	0.00	385.60	0.00	0.01	353.35
Maximum (tons/phase)	0.06	0.48	1.15	1.01	0.03	0.99	0.22	0.03	0.21	0.00	385.60	0.02	0.01	353.35
Total (tons/construction project)	0.13	0.91	2.02	1.95	0.08	1.87	0.45	0.06	0.39	0.01	564.85	0.03	0.01	517.10
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.														
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The CO2e emissions are reported as metric tons per phase.														

Road Construction Emissions Model Data Entry Worksheet		Version 8.1.0																																								
Note: Required data input sections have a yellow background. Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background. The user is required to enter information in cells D10 through D24, E28 through G35, and D38 through D41 for all project types. Please use "Clear Data Input & User Overrides" button first before changing the Project Type or begin a new project.																																										
Input Type Project Name Construction Start Year Project Type Project Construction Time Working Days per Month Predominant Soil/Site Type: Enter 1, 2, or 3 (for project within "Sacramento County", follow soil type selection instructions in cells E18 to E20 otherwise see instructions provided in cells J18 to J22) Project Length Total Project Area Maximum Area Disturbed/Day Water Trucks Used? Charcot Extension (Roadway) 2019 1 6.00 22.00 2 0.60 5.60 1.00 1 Enter a Year between 2014 and 2025 (inclusive) 1) New Road Construction : Project to build a roadway from bare ground, which generally requires more site preparation than widening an existing roadway 2) Road Widening : Project to add a new lane to an existing roadway 3) Bridge/Overpass Construction : Project to build an elevated roadway, which generally requires some different equipment than a new roadway, such as a crane 4) Other Linear Project Type: Non-roadway project such as a pipeline, transmission line, or levee construction months days (assume 22 if unknown) 1) Sand Gravel : Use for quaternary deposits (Delta/West County) 2) Weathered Rock-Earth : Use for Laguna formation (Jackson Highway area) or the lone formation (Scott Road, Rancho Murietta) 3) Blasted Rock : Use for Salt Springs Slate or Copper Hill Volcanics (Folsom South of Highway 50, Rancho Murietta) miles acres acre 1. Yes 2. No To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet. 																																										
Please note that the soil type instructions provided in cells E18 to E20 are specific to Sacramento County. Maps available from the California Geologic Survey (see weblink below) can be used to determine soil type outside Sacramento County. http://www.conservation.ca.gov/cgs/information/geologic_mapping/Pages/googlemaps.aspx#regionalseries																																										
Material Hauling Quantity Input <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 20%;">Material Type</th> <th style="width: 10%;">Phase</th> <th style="width: 20%;">Haul Truck Capacity (yd³) (assume 20 if unknown)</th> <th style="width: 20%;">Import Volume (yd³/day)</th> <th style="width: 20%;">Export Volume (yd³/day)</th> </tr> </thead> <tbody> <tr> <td rowspan="4">Soil</td> <td>Grubbing/Land Clearing</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Grading/Excavation</td> <td>20.00</td> <td></td> <td>303.00</td> </tr> <tr> <td>Drainage/Utilities/Sub-Grade</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Paving</td> <td></td> <td></td> <td></td> </tr> <tr> <td rowspan="4">Asphalt</td> <td>Grubbing/Land Clearing</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Grading/Excavation</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Drainage/Utilities/Sub-Grade</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Paving</td> <td>20.00</td> <td>3000.00</td> <td></td> </tr> </tbody> </table>				Material Type	Phase	Haul Truck Capacity (yd ³) (assume 20 if unknown)	Import Volume (yd ³ /day)	Export Volume (yd ³ /day)	Soil	Grubbing/Land Clearing				Grading/Excavation	20.00		303.00	Drainage/Utilities/Sub-Grade				Paving				Asphalt	Grubbing/Land Clearing				Grading/Excavation				Drainage/Utilities/Sub-Grade				Paving	20.00	3000.00	
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Mitigation Options <table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td style="width: 30%;">On-road Fleet Emissions Mitigation</td> <td style="width: 20%;">No Mitigation</td> <td style="width: 50%;">Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer.</td> </tr> <tr> <td>Off-road Equipment Emissions Mitigation</td> <td>No Mitigation</td> <td>Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/ceqa/mitigation.shtml). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard</td> </tr> </tbody> </table>				On-road Fleet Emissions Mitigation	No Mitigation	Select "2010 and Newer On-road Vehicles Fleet" option when the on-road heavy-duty truck fleet for the project will be limited to vehicles of model year 2010 or newer.	Off-road Equipment Emissions Mitigation	No Mitigation	Select "20% NOx and 45% Exhaust PM reduction" option if the project will be required to use a lower emitting off-road construction fleet. The SMAQMD Construction Mitigation Calculator can be used to confirm compliance with this mitigation measure (http://www.airquality.org/ceqa/mitigation.shtml). Select "Tier 4 Equipment" option if some or all off-road equipment used for the project meets CARB Tier 4 Standard																																	
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The remaining sections of this sheet contain areas that can be modified by the user, although those modifications are optional.

Note: The program's estimates of construction period phase length can be overridden in cells D50 through D53, and F50 through F53.

Construction Periods	User Override of Construction Months	Program Calculated Months	User Override of Phase Starting Date	Program Default Phase Starting Date
Grubbing/Land Clearing	0.00	0.60		1/1/2019
Grading/Excavation	1.50	2.70		1/1/2019
Drainage/Utilities/Sub-Grade	1.00	1.80		2/16/2019
Paving	3.50	0.90		3/19/2019
Totals (Months)		6		

Note: Soil Hauling emission default values can be overridden in cells D61 through D64, and F61 through F64.

Soil Hauling Emissions		User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT					
User Input											
Miles/round trip: Grubbing/Land Clearing		2.00	30.00		0	0.00					
Miles/round trip: Grading/Excavation		2.00	30.00		16	32.00					
Miles/round trip: Drainage/Utilities/Sub-Grade		2.00	30.00		0	0.00					
Miles/round trip: Paving		2.00	30.00		0	0.00					
Emission Rates		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/mile)		0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03
Drainage/Utilities/Sub-Grade (grams/mile)		0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03
Paving (grams/mile)		0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03
Hauling Emissions		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation		0.01	0.04	0.35	0.01	0.00	0.00	116.21	0.00	0.00	117.39
Tons per const. Period - Grading/Excavation		0.00	0.00	0.01	0.00	0.00	0.00	1.92	0.00	0.00	1.94
Pounds per day - Drainage/Utilities/Sub-Grade		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Paving		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total tons per construction project		0.00	0.00	0.01	0.00	0.00	0.00	1.92	0.00	0.00	1.94

Note: Asphalt Hauling emission default values can be overridden in cells D87 through D90, and F87 through F90.

Asphalt Hauling Emissions		User Override of Miles/Round Trip	Program Estimate of Miles/Round Trip	User Override of Truck Round Trips/Day	Default Values Round Trips/Day	Calculated Daily VMT
User Input						
Miles/round trip: Grubbing/Land Clearing		30.00		0	0.00	
Miles/round trip: Grading/Excavation		30.00		0	0.00	
Miles/round trip: Drainage/Utilities/Sub-Grade		30.00		0	0.00	
Miles/round trip: Paving		30.00		150	4500.00	

Emission Rates	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Grubbing/Land Clearing (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/mile)	0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03
Draining/Utilities/Sub-Grade (grams/mile)	0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03
Paving (grams/mile)	0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03
Emissions	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Pounds per day - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Drainage/Utilities/Sub-Grade	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Paving	1.33	5.19	49.29	1.30	0.66	0.16	16,342.44	0.06	0.55	16,508.48
Tons per const. Period - Paving	0.05	0.20	1.90	0.05	0.03	0.01	629.18	0.00	0.02	635.58
Total tons per construction project	0.05	0.20	1.90	0.05	0.03	0.01	629.18	0.00	0.02	635.58

Note: Worker commute default values can be overridden in cells D113 through D118.

Worker Commute Emissions		User Override of Worker Commute Default Values				Default Values						
User Input		Default Values		Calculated Daily Trips		Calculated Daily VMT						
Miles/ one-way trip		20										
One-way trips/day		2										
No. of employees: Grubbing/Land Clearing		5		10		200.00						
No. of employees: Grading/Excavation		18		36		720.00						
No. of employees: Drainage/Utilities/Sub-Grade		15		30		600.00						
No. of employees: Paving		12		24		480.00						
Emission Rates		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e	
Grubbing/Land Clearing (grams/mile)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/mile)		0.02	1.19	0.13	0.05	0.02	0.00	381.71	0.01	0.01	383.53	383.53
Draining/Utilities/Sub-Grade (grams/mile)		0.02	1.19	0.13	0.05	0.02	0.00	381.71	0.01	0.01	383.53	383.53
Paving (grams/mile)		0.02	1.19	0.13	0.05	0.02	0.00	381.71	0.01	0.01	383.53	383.53
Grubbing/Land Clearing (grams/trip)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation (grams/trip)		1.08	2.86	0.23	0.00	0.00	0.00	85.97	0.01	0.01	89.17	89.17
Draining/Utilities/Sub-Grade (grams/trip)		1.08	2.86	0.23	0.00	0.00	0.00	85.97	0.01	0.01	89.17	89.17
Paving (grams/trip)		1.08	2.86	0.23	0.00	0.00	0.00	85.97	0.01	0.01	89.17	89.17
Emissions		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e	
Pounds per day - Grubbing/Land Clearing		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grubbing/Land Clearing		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day - Grading/Excavation		0.12	2.12	0.22	0.07	0.03	0.01	612.72	0.02	0.01	615.86	615.86
Tons per const. Period - Grading/Excavation		0.00	0.03	0.00	0.00	0.00	0.00	10.11	0.00	0.00	10.16	10.16
Pounds per day - Drainage/Utilities/Sub-Grade		0.10	1.76	0.18	0.06	0.03	0.01	510.60	0.01	0.01	513.22	513.22
Tons per const. Period - Drainage/Utilities/Sub-Grade		0.00	0.02	0.00	0.00	0.00	0.00	5.62	0.00	0.00	5.65	5.65
Pounds per day - Paving		0.08	1.41	0.15	0.05	0.02	0.00	408.48	0.01	0.01	410.58	410.58
Tons per const. Period - Paving		0.00	0.05	0.01	0.00	0.00	0.00	15.73	0.00	0.00	15.81	15.81
Total tons per construction project		0.01	0.11	0.01	0.00	0.00	0.00	31.45	0.00	0.00	31.61	31.61

Note: Water Truck default values can be overridden in cells D145 through D148, and F145 through F148.

Water Truck Emissions		User Override of Default # Water Trucks		Program Estimate of Number of Water Trucks		User Override of Truck Miles Traveled/Vehicle/Day		Default Values Miles Traveled/Vehicle/Day		Calculated Daily VMT								
User Input																		
Grubbing/Land Clearing - Exhaust		1		1		40.00		40.00		40.00								
Grading/Excavation - Exhaust		1		1		40.00		40.00		40.00								
Drainage/Utilities/Subgrade		1		1		40.00		40.00		40.00								
Paving		1		1		40.00		40.00		40.00								
Emission Rates		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e							
Grubbing/Land Clearing (grams/mile)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Grading/Excavation (grams/mile)		0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03	1,664.03						
Draining/Utilities/Sub-Grade (grams/mile)		0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03	1,664.03						
Paving (grams/mile)		0.13	0.52	4.97	0.13	0.07	0.02	1,647.29	0.01	0.06	1,664.03	1,664.03						
Emissions		ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e							
Pounds per day - Grubbing/Land Clearing		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Tons per const. Period - Grubbing/Land Clearing		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Pounds per day - Grading/Excavation		0.01	0.05	0.44	0.01	0.01	0.00	145.27	0.00	0.00	146.74	146.74						
Tons per const. Period - Grading/Excavation		0.00	0.00	0.01	0.00	0.00	0.00	2.40	0.00	0.00	2.42	2.42						
Pounds per day - Drainage/Utilities/Sub-Grade		0.01	0.05	0.44	0.01	0.01	0.00	145.27	0.00	0.00	146.74	146.74						
Tons per const. Period - Drainage/Utilities/Sub-Grade		0.00	0.00	0.00	0.00	0.00	0.00	1.60	0.00	0.00	1.61	1.61						
Pounds per day - Paving		0.01	0.05	0.44	0.01	0.01	0.00	145.27	0.00	0.00	146.74	146.74						
Tons per const. Period - Paving		0.00	0.00	0.02	0.00	0.00	0.00	5.59	0.00	0.00	5.65	5.65						
Total tons per construction project		0.00	0.00	0.03	0.00	0.00	0.00	9.59	0.00	0.00	9.68	9.68						

Note: Fugitive dust default values can be overridden in cells D171 through D173.

Fugitive Dust		User Override of Max Acreage Disturbed/Day		Default Maximum Acreage/Day		PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing				0.00	0.00	0.00	0.00	0.00	0.00
Fugitive Dust - Grading/Excavation				1.00	10.00	0.17	2.08	0.03	0.03
Fugitive Dust - Drainage/Utilities/Subgrade				1.00	10.00	0.11	2.08	0.02	0.02

Off-Road Equipment Emissions														
Default		Mitigation Option												
Grubbing/Land Clearing	Number of Vehicles	Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e	
Override of Default Number of Vehicles	Program-estimate		Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	1		Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	1		Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	2		Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
User-Defined Off-road Equipment					ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Number of Vehicles	If non-default vehicles are used, please provide information in "Non-default Off-road Equipment" tab			Equipment Tier	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00			N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Grubbing/Land Clearing			pounds per day		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Grubbing/Land Clearing			tons per phase		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Grading/Excavation		Default Number of Vehicles	Mitigation Option Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Default Equipment Tier	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	SOx pounds/day	CO2 pounds/day	CH4 pounds/day	N2O pounds/day	CO2e pounds/day
Override of Default Number of Vehicles	Program-estimate														
				Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	1			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.00	3			Model Default Tier	Excavators	0.27	3.37	2.77	0.13	0.12	0.01	527.30	0.17	0.00	532.86
				Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1			Model Default Tier	Graders	0.29	1.73	2.85	0.16	0.15	0.00	232.07	0.07	0.00	234.51
				Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2			Model Default Tier	Rollers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.00	1			Model Default Tier	Rubber Tired Loaders	1.57	6.62	19.02	0.64	0.59	0.02	2,438.64	0.77	0.02	2,464.40
0.00	2			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	2			Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2			Model Default Tier	Tractors/Loaders/Backhoes	0.24	2.33	2.36	0.16	0.15	0.00	310.71	0.10	0.00	313.98
				Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
				Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
User-Defined Off-road Equipment		If non-default vehicles are used, please provide information in "Non-default Off-road Equipment" tab				ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e
Number of Vehicles		Equipment Tier		Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00		N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation				pounds per day	2.36	14.04	27.00	1.09	1.00	0.04	3,508.73	1.11	0.03	3,545.76	
Grading/Excavation				tons per phase	0.04	0.23	0.45	0.02	0.02	0.00	57.89	0.02	0.00	58.51	

Data Entry Worksheet 6

Paving	Default	Mitigation Option		Default	ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e	
	Number of Vehicles	Override of Default Equipment Tier (applicable only when "Tier 4 Mitigation" Option Selected)	Equipment Tier												
	Override of Default Number of Vehicles		Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day		
			Model Default Tier	Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2.00			Model Default Tier	Cement and Mortar Mixers	0.01	0.08	0.09	0.00	0.00	0.00	12.63	0.00	0.00	12.69	
			Model Default Tier	Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Excavators	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Graders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2.00	1		Model Default Tier	Pavers	0.14	1.41	1.51	0.07	0.07	0.00	225.99	0.07	0.00	227.97	
2.00	1		Model Default Tier	Paving Equipment	0.11	1.25	1.12	0.06	0.05	0.00	200.13	0.06	0.00	202.25	
			Model Default Tier	Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
	3		Model Default Tier	Rollers	0.17	1.45	1.70	0.11	0.10	0.00	197.20	0.06	0.00	199.28	
			Model Default Tier	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00	2		Model Default Tier	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4.00	2		Model Default Tier	Tractors/Loaders/Backhoes	0.47	4.65	4.72	0.32	0.29	0.01	621.43	0.20	0.01	627.97	
			Model Default Tier	Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
			Model Default Tier	Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
User-Defined Off-road Equipment					ROG	CO	NOx	PM10	PM2.5	SOx	CO2	CH4	N2O	CO2e	
Number of Vehicles					pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	
0.00			N/A	Type	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00			N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00			N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00			N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00			N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00			N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00			N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
0.00			N/A		0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Paving					pounds per day	0.90	8.84	9.15	0.56	0.52	0.01	1,256.97	0.39	0.01	1,270.15
Paving					tons per phase	0.03	0.34	0.35	0.02	0.02	0.00	48.39	0.02	0.00	48.90
Total Emissions all Phases (tons per construction period) =>						0.09	0.70	0.92	0.05	0.04	0.00	125.28	0.04	0.00	126.60

Equipment default values for horsepower and hours/day can be overridden in cells D391 through D424 and F391 through F424.

Equipment	User Override of Horsepower	Default Values Horsepower	User Override of Hours/day	Default Values Hours/day
Aerial Lifts		63		8
Air Compressors		78		8
Bore/Drill Rigs		206		8
Cement and Mortar Mixers		9	1.00	8
Concrete/Industrial Saws		81		8
Cranes		226		8
Crawler Tractors		208		8
Crushing/Proc. Equipment		85		8
Excavators		163	4.00	8
Forklifts		89	1.00	8
Generator Sets		84		8
Graders		175	3.00	8
Off-Highway Tractors		123		8
Off-Highway Trucks		400		8
Other Construction Equipment		172		8
Other General Industrial Equipment		88		8
Other Material Handling Equipment		167		8
Pavers		126	2.00	8
Paving Equipment		131	2.00	8
Plate Compactors		8		8
Pressure Washers		13		8
Pumps		84		8
Rollers		81	2.00	8
Rough Terrain Forklifts		100		8
Rubber Tired Dozers		255	2.00	8
Rubber Tired Loaders		200		8
Scrapers		362		8
Signal Boards		6		8
Skid Steer Loaders		65		8
Surfacing Equipment		254		8
Sweepers/Scrubbers		64		8
Tractors/Loaders/Backhoes		98	4.00	8
Trenchers		81		8
Welders		46		8

END OF DATA ENTRY SHEET

Road Construction Emissions Model, Version 8.1.0

Daily Emission Estimates for -> Charcot Extension (Roadway)														
Project Phases (Pounds)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	PM10 (lbs/day)	Exhaust (lbs/day)	Fugitive Dust (lbs/day)	PM2.5 (lbs/day)	Exhaust (lbs/day)	Fugitive Dust (lbs/day)	SOx (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	N2O (lbs/day)	CO2e (lbs/day)
Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	2.51	16.24	28.01	11.18	1.18	10.00	3.12	1.04	2.08	0.04	4,382.93	1.13	0.05	4,425.76
Drainage/Utilities/Sub-Grade	1.18	13.57	11.33	10.69	0.69	10.00	2.68	0.60	2.08	0.02	2,382.35	0.56	0.03	2,404.58
Paving	2.33	15.49	59.03	1.92	1.92	0.00	1.21	1.21	0.00	0.17	18,153.15	0.47	0.57	18,335.95
Maximum (pounds/day)	2.51	16.24	59.03	11.18	1.92	10.00	3.12	1.21	2.08	0.17	18,153.15	1.13	0.57	18,335.95
Total (tons/construction project)	0.14	1.01	2.86	0.38	0.10	0.28	0.13	0.07	0.06	0.01	797.42	0.04	0.02	805.41
Notes:	Project Start Year -> 2019													
	Project Length (months) -> 6													
	Total Project Area (acres) -> 6													
	Maximum Area Disturbed/Day (acres) -> 1													
	Water Truck Used? -> Yes													
	Total Material Imported/Exported Volume (yd³/day)		Daily VMT (miles/day)											
Phase	Soil	Asphalt	Soil Hauling	Asphalt Hauling	Worker Commute	Water Truck								
Grubbing/Land Clearing	0	0	0	0	200	40								
Grading/Excavation	303	0	32	0	720	40								
Drainage/Utilities/Sub-Grade	0	0	0	0	600	40								
Paving	0	3000	0	4,500	480	40								
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.														
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.														
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.														
Total Emission Estimates by Phase for -> Charcot Extension (Roadway)														
Project Phases (Tons for all except CO2e. Metric tonnes for CO2e)	ROG (tons/phase)	CO (tons/phase)	NOx (tons/phase)	PM10 (tons/phase)	PM10 (tons/phase)	PM10 (tons/phase)	PM2.5 (tons/phase)	PM2.5 (tons/phase)	PM2.5 (tons/phase)	SOx (tons/phase)	CO2 (tons/phase)	CH4 (tons/phase)	N2O (tons/phase)	CO2e (MT/phase)
Grubbing/Land Clearing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading/Excavation	0.04	0.27	0.46	0.18	0.02	0.17	0.05	0.02	0.03	0.00	72.32	0.02	0.00	66.25
Drainage/Utilities/Sub-Grade	0.01	0.15	0.12	0.12	0.01	0.11	0.03	0.01	0.02	0.00	26.21	0.01	0.00	24.00
Paving	0.09	0.60	2.27	0.07	0.07	0.00	0.05	0.05	0.00	0.01	698.90	0.02	0.02	640.42
Maximum (tons/phase)	0.09	0.60	2.27	0.18	0.07	0.17	0.05	0.05	0.03	0.01	698.90	0.02	0.02	640.42
Total (tons/construction project)	0.14	1.01	2.86	0.38	0.10	0.28	0.13	0.07	0.06	0.01	797.42	0.04	0.02	730.66
PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.														
Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns G and H. Total PM2.5 emissions shown in Column I are the sum of exhaust and fugitive dust emissions shown in columns J and K.														
CO2e emissions are estimated by multiplying mass emissions for each GHG by its global warming potential (GWP), 1 , 25 and 298 for CO2, CH4 and N2O, respectively. Total CO2e is then estimated by summing CO2e estimates over all GHGs.														
The CO2e emissions are reported as metric tons per phase.														

Attachment 2: Operational Emissions Analysis – CT-Emfac2014

Charcot Ave Emissions Modeling								
Roadway Only								
			Emissions (in pounds per day)					
	Volume	Length	ROG	NOx	CO	PM10	PM2.5	CO2
NB 2015	700	0.12	0.01	0.05	0.18	0.04	0.01	67.77
	7600	0.18	0.11	0.78	2.96	0.58	0.13	1103.74
Build 2015	8700	0.39	0.27	1.91	7.23	1.43	0.32	2688.50
	16100	0.18	0.23	1.63	6.18	1.22	0.28	2296.28
			0.38	2.72	10.27	2.04	0.46	
NB 2025	700	0.12	0.01	0.04	0.16	0.04	0.01	74.03
	11300	0.18	0.19	0.95	3.79	0.86	0.21	1792.57
Build 2025	10700	0.39	0.37	1.89	7.72	1.76	0.44	3627.62
	21400	0.12	0.23	1.17	4.75	1.09	0.27	2232.38
			0.41	2.07	8.51	1.95	0.49	
NB 2040	700	0.12	0.01	0.05	0.11	0.04	0.01	70.71
	16800	0.18	0.28	1.64	3.99	1.27	0.28	2545.53
	13900	0.39	0.50	2.94	7.15	2.28	0.51	4524.63
	29400	0.18	0.49	2.87	6.98	2.22	0.49	4416.96
			0.70	4.12	10.02	3.19	0.71	
			Emissions (in tons/year)					
			ROG	NOx	CO	PM10	PM2.5	CO2
	2015	NoBuild	0.02	0.15	0.57	0.11	0.03	194
		Build	0.09	0.65	2.45	0.48	0.11	825
		Increase	0.07	0.50	1.87	0.37	0.08	631
	2025	NoBuild	0.04	0.18	0.72	0.16	0.04	341
		Build	0.11	0.56	2.27	0.52	0.13	1,069
		Increase	0.07	0.35	1.41	0.32	0.08	662
	2040	NoBuild	0.05	0.31	0.75	0.24	0.05	477
		Build	0.18	1.06	2.58	0.82	0.18	1,632
		Increase	0.13	0.75	1.83	0.58	0.13	1,154

2020				
Measure	No-Project	Project	Change	
Daily VMT	3928408	3917065	-0.3%	
Daily VHT	121715	118124		
Average Speed	32.3	33.2		
Emissions in lbs/day				
Fleet Average Running Exhaust Emission Factors (grams/veh-mile)				
Pollutant Name			32.3	33.2
ROG	319.65	307.86	0.0369	0.0357
TOG	424.39	408.70	0.0490	0.0474
CO	8505.32	8348.93	0.9829	0.9677
NOx	2249.08	2209.21	0.2599	0.2561
CO2	3169561.29	3103752.42	366.3013	359.7345
CH4	87.23	84.02	0.0101	0.0097
PM10	27.92	27.15	0.0032	0.0031
PM2.5	26.15	25.43	0.0030	0.0029
Benzene	9.97	9.61	0.0012	0.0011
Acrolein	0.45	0.43	0.0001	0.0001
Acetaldehyde	6.83	6.53	0.0008	0.0008
Formaldehyde	16.87	16.15	0.0019	0.0019
Butadiene	2.09	2.01	0.0002	0.0002
Naphthalene	0.29	0.28	0.0000	0.0000
POM	0.41	0.40	0.0000	0.0000
Diesel PM	12.85	12.63	0.0015	0.0015
DEOG	72.71	69.27	0.0084	0.0080
Fleet Average Running Loss Emission Factors (grams/veh-hour)				
Pollutant Name				Emission Factor
ROG	432.57	419.81		1.613495
TOG	432.57	419.81		1.613495
Benzene	4.33	4.20		0.016135
Butadiene	0.00	0.00		0
Naphthalene	0.61	0.59		0.002259
Fleet Average Tire Wear Factors (grams/veh-mile)				
Pollutant Name				Emission Factor
PM10	74.76	74.55		0.00864
PM2.5	18.69	18.64		0.00216
Fleet Average Brake Wear Factors (grams/veh-mile)				
Pollutant Name				Emission Factor
PM10	352.66	351.64		0.040756
PM2.5	151.14	150.70		0.017467
Entrained Roadway Dust				
Pollutant Name				Emission Factor
PM10	1204.79	1201.31		0.1392356 gm/mi
PM2.5	180.77	180.25		0.02089143 gm/mi
Total Emissions (lbs/day)			GHG Metric Tons	
Pollutant Name	No-Project	Project	Difference	
ROG	752	728	-25	
TOG	857	829	-28	
CO	8505	8349	-156	
NOx	2249	2209	-40	
CO2	3169561	3103752	-65809	524,765
CH4	87	84	-3	513,870
PM10	1660	1655	-5.49	(10,896)
PM2.5	377	375	-1.73	-0.34%
Benzene	14	14	-0.49	
Acrolein	0	0	-0.02	
Acetaldehyde	7	7	-0.30	
Formaldehyde	17	16	-0.72	
Butadiene	2	2	-0.07	
Naphthalene	0	0	-0.01	
POM	0	0	-0.02	
Diesel PM	13	13	-0.21	
DEOG	73	69	-3.45	

2025											
Measure	No-Project	Project									
Daily VMT	4789277	4787047	0.0%								
Daily VHT	209093	205279									
Average Speed	22.9	23.32									
Emissions in lbs/day											
Fleet Average Running Exhaust Emission Factors (grams/veh-mile)											
Pollutant Name			22.9	23.3	5 mph	10 mph	15 mph	20 mph	25 mph	30 mph	
ROG	436.28	425.73	0.0414	0.0404	0.15528	0.103818	0.069361	0.048469	0.036207	0.028456	
TOG	584.17	570.01	0.0554	0.0541	0.20865	0.139294	0.092978	0.064927	0.048461	0.038053	
CO	8934.95	8851.43	0.8470	0.8395	1.391707	1.20065	1.029474	0.901557	0.807475	0.732249	
NOx	2233.61	2172.37	0.2117	0.2060	0.704623	0.555651	0.373109	0.253122	0.181765	0.14648	
CO2	4220799.65	4161412.51	400.1111	394.6653	918.843689	701.96234	543.536	439.5935	371.5204	325.3708	
CH4	124.22	121.19	0.0118	0.0115	0.044859	0.029645	0.019769	0.013816	0.010297	0.008072	
PM10	35.64	34.83	0.0034	0.0033	0.01228	0.008085	0.005497	0.003924	0.002983	0.002391	
PM2.5	33.06	32.31	0.0031	0.0031	0.011358	0.007489	0.005095	0.003639	0.002768	0.002221	
Benzene	13.76	13.43	0.0013	0.0013	0.004894	0.003251	0.002177	0.001527	0.001143	0.0009	
Acrolein	0.62	0.61	0.0001	0.0001	0.000219	0.000141	0.000096	0.000068	0.000052	0.000041	
Acetaldehyde	9.66	9.40	0.0009	0.0009	0.003466	0.002614	0.001671	0.001087	0.000791	0.000602	
Formaldehyde	23.70	23.09	0.0022	0.0022	0.008495	0.006232	0.004022	0.00266	0.001947	0.001495	
Butadiene	2.88	2.81	0.0003	0.0003	0.00102	0.000666	0.000449	0.000319	0.000239	0.000189	
Naphthalene	0.40	0.39	0.0000	0.0000	0.00014	0.000095	0.000063	0.000044	0.000033	0.000026	
POM	0.57	0.55	0.0001	0.0001	0.000209	0.000141	0.000092	0.000063	0.000047	0.000037	
Diesel PM	7.88	7.76	0.0007	0.0007	0.001755	0.001447	0.001081	0.000826	0.00069	0.000601	
DEOG	103.15	100.34	0.0098	0.0095	0.037289	0.029184	0.01839	0.011674	0.008405	0.006322	
Fleet Average Running Loss Emission Factors (grams/veh-hour)											
Pollutant Name					Emission Factor						
ROG	586.80	576.10			1.274107						
TOG	586.80	576.10			1.274107						
Benzene	5.87	5.76			0.012741						
Butadiene	0.00	0.00			0						
Naphthalene	0.82	0.81			0.001784						
Fleet Average Tire Wear Factors (grams/veh-mile)											
Pollutant Name					Emission Factor						
PM10	91.83	91.79			0.008705						
PM2.5	22.95	22.94			0.002176						
Fleet Average Brake Wear Factors (grams/veh-mile)											
Pollutant Name					Emission Factor						
PM10	429.32	429.12			0.040697						
PM2.5	229.55	229.44			0.02176						
Entrained Roadway Dust											
Pollutant Name					Emission Factor						
PM10	1468.81	1468.12			0.1392356 gm/mi						
PM2.5	220.39	220.28			0						

Charcot Ave Emissions Modeling									
2040									
Measure	No-Project	Project							
Daily VMT	6080580	6092019	0.2%						
Daily VHT	340160	336012							
Average Speed	17.88	18.13							
Emissions in lbs/day									
Fleet Average Running Exhaust Emission Factors (grams/veh-mile)									
Pollutant Name			17.9	18.1	5 mph	10 mph	15 mph	20 mph	25 mph 30 mph
ROG	571.15	563.74	0.0426	0.0420	0.115303	0.077866	0.051813	0.036005	0.026783 0.020944
TOG	755.74	745.91	0.0564	0.0556	0.152597	0.103134	0.068585	0.047622	0.035394 0.027647
CO	8065.00	8030.30	0.6022	0.5984	0.922666	0.785766	0.656057	0.563139	0.499347 0.449937
NOx	3365.08	3301.82	0.2513	0.2461	0.680336	0.522614	0.326449	0.196796	0.120842 0.085997
CO2	5118494.48	5084693.78	382.1669	378.9304	718.211975	552.74341	429.0969	348.1831	295.7672 260.4127
CH4	153.11	151.12	0.0114	0.0113	0.030999	0.020876	0.013888	0.009653	0.007165 0.005586
PM10	26.97	26.68	0.0020	0.0020	0.005225	0.003454	0.002388	0.001743	0.001344 0.00109
PM2.5	25.02	24.75	0.0019	0.0018	0.004829	0.003197	0.002214	0.001618	0.001249 0.001014
Benzene	18.09	17.86	0.0014	0.0013	0.003653	0.002452	0.001637	0.001143	0.000852 0.000668
Acrolein	0.76	0.75	0.0001	0.0001	0.000156	0.0001	0.000068	0.000049	0.000037 0.000029
Acetaldehyde	16.52	16.26	0.0012	0.0012	0.003167	0.002416	0.001546	0.001007	0.000727 0.000546
Formaldehyde	38.29	37.71	0.0029	0.0028	0.007415	0.005527	0.003563	0.002349	0.001706 0.001293
Butadiene	3.68	3.63	0.0003	0.0003	0.000748	0.000491	0.000331	0.000234	0.000175 0.000138
Naphthalene	0.57	0.56	0.0000	0.0000	0.000113	0.000078	0.000052	0.000036	0.000027 0.000021
POM	0.68	0.67	0.0001	0.0000	0.000137	0.000094	0.000062	0.000042	0.000031 0.000024
Diesel PM	5.72	5.70	0.0004	0.0004	0.000631	0.000562	0.000468	0.000398	0.00035 0.000315
DEOG	187.05	183.98	0.0140	0.0137	0.035411	0.027909	0.017668	0.011285	0.008062 0.005984
Fleet Average Running Loss Emission Factors (grams/veh-hour)									
Pollutant Name					Emission Factor				
ROG	530.65	524.18			0.708245				
TOG	530.65	524.18			0.708245				
Benzene	5.31	5.24			0.007082				
Butadiene	0.00	0.00			0				
Naphthalene	0.74	0.73			0.000992				
Fleet Average Tire Wear Factors (grams/veh-mile)									
Pollutant Name					Emission Factor				
PM10	117.53	117.75			0.008775				
PM2.5	29.39	29.44			0.002194				
Fleet Average Brake Wear Factors (grams/veh-mile)									
Pollutant Name					Emission Factor				
PM10	543.72	544.74			0.040596				
PM2.5	233.02	233.46			0.017398				
Entrained Roadway Dust									
Pollutant Name					Emission Factor				
PM10	1864.83	1868.34			0.1392356 gm/mi				
PM2.5	279.81	280.33			0.02089143 gm/mi				
Total Emissions (lbs/day)					GHG Metric Tons				
Pollutant Name	No-Project	Project	Difference						
ROG	1102	1088	-14						
TOG	1286	1270	-16						
CO	8065	8030	-35						
NOx	3365	3302	-63						
CO2	5118494	5084694	-33801	847,438	841,842	(5,596)			
CH4	153	151	-2			-0.11%			
PM10	2553	2558	4.46						
PM2.5	567	568	0.75						
Benzene	23	23	-0.30						
Acrolein	1	1	-0.01						
Acetaldehyde	17	16	-0.26						
Formaldehyde	38	38	-0.58						
Butadiene	4	4	-0.05						
Naphthalene	1	1	-0.01						
POM	1	1	-0.01						
Diesel PM	6	6	-0.03						
DEOG	187	184	-3.07						

Attachment 3: Health Risk Calculation Methodology

A health risk assessment (HRA) for exposure to Toxic Air Contaminates (TACs) requires the application of a risk characterization model to the results from the air dispersion model to estimate potential health risk at each sensitive receptor location. The State of California Office of Environmental Health Hazard Assessment (OEHHA) and California Air Resources Board (CARB) develop recommended methods for conducting health risk assessments. The most recent OEHHA risk assessment guidelines were published in February of 2015.¹⁶ These guidelines incorporate substantial changes designed to provide for enhanced protection of children, as required by State law, compared to previous published risk assessment guidelines. CARB has provided additional guidance on implementing OEHHA's recommended methods.¹⁷ This HRA used the recent 2015 OEHHA risk assessment guidelines and CARB guidance. The BAAQMD has adopted recommended procedures for applying the newest OEHHA guidelines as part of Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants.¹⁸ Exposure parameters from the OEHHA guidelines and the recent BAAQMD HRA Guidelines were used in this evaluation.

Cancer Risk

Potential increased cancer risk from inhalation of TACs are calculated based on the TAC concentration over the period of exposure, inhalation dose, the TAC cancer potency factor, and an age sensitivity factor to reflect the greater sensitivity of infants and children to cancer causing TACs. The inhalation dose depends on a person's breathing rate, exposure time and frequency of exposure, and the exposure duration. These parameters vary depending on the age, or age range, of the persons being exposed and whether the exposure is considered to occur at a residential location or other sensitive receptor location.

The current OEHHA guidance recommends that cancer risk be calculated by age groups to account for different breathing rates and sensitivity to TACs. Specifically, they recommend evaluating risks for the third trimester of pregnancy to age zero, ages zero to less than two (infant exposure), ages two to less than 16 (child exposure), and ages 16 to 70 (adult exposure). Age sensitivity factors (ASFs) associated with the different types of exposure are an ASF of 10 for the third trimester and infant exposures, an ASF of 3 for a child exposure, and an ASF of 1 for an adult exposure. Also associated with each exposure type are different breathing rates, expressed as liters per kilogram of body weight per day (L/kg-day). As recommended by the BAAQMD, 95th percentile breathing rates are used for the third trimester and infant exposures, and 80th percentile breathing rates for child and adult exposures. Additionally, CARB and the BAAQMD recommend the use of a residential exposure duration of 30 years for sources with long-term emissions (e.g., roadways).

Under previous OEHHA and BAAQMD HRA guidance, residential receptors are assumed to be at their home 24 hours a day, or 100 percent of the time. In the 2015 Risk Assessment Guidance, OEHHA includes adjustments to exposure duration to account for the fraction of time at home (FAH), which can be less than 100 percent of the time, based on updated population and activity statistics. The FAH factors are age-specific and are: 0.85 for third trimester of pregnancy to less than 2 years old, 0.72 for ages 2 to less than 16 years, and 0.73 for ages 16 to 70 years. Use of the FAH factors is allowed by the BAAQMD if there are no schools in the project vicinity that would have a cancer risk of one in a million or greater assuming 100 percent exposure (FAH = 1.0).

Functionally, cancer risk is calculated using the following parameters and formulas:

$$\text{Cancer Risk (per million)} = \text{CPF} \times \text{Inhalation Dose} \times \text{ASF} \times \text{ED/AT} \times \text{FAH} \times 10^6$$

Where:

$$\text{CPF} = \text{Cancer potency factor (mg/kg-day)}^{-1}$$

¹⁶ OEHHA, 2015. *Air Toxics Hot Spots Program Risk Assessment Guidelines, The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*. Office of Environmental Health Hazard Assessment. February.

¹⁷ CARB, 2015. *Risk Management Guidance for Stationary Sources of Air Toxics*. July 23.

¹⁸ BAAQMD, 2016. *BAAQMD Air Toxics NSR Program Health Risk Assessment (HRA) Guidelines*. December 2016.

ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

$$\text{Inhalation Dose} = C_{\text{air}} \times \text{DBR} \times A \times (\text{EF}/365) \times 10^{-6}$$

Where:

C_{air} = concentration in air ($\mu\text{g}/\text{m}^3$)
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
 10^{-6} = Conversion factor

The health risk parameters used in this evaluation are summarized as follows:

Parameter	Exposure Type →	Infant		Child		Adult
	Age Range →	3 rd Trimester	0 < 2	2 < 9	2 < 16	16 - 30
DPM Cancer Potency Factor ($\text{mg}/\text{kg}\cdot\text{day}$) ⁻¹		1.10E+00	1.10E+00	1.10E+00	1.10E+00	1.10E+00
Daily Breathing Rate (L/kg-day)*		361	1,090	631	572	261
Inhalation Absorption Factor		1	1	1	1	1
Averaging Time (years)		70	70	70	70	70
Exposure Duration (years)		0.25	2	14	14	14
Exposure Frequency (days/year)		350	350	350	350	350
Age Sensitivity Factor		10	10	3	3	1
Fraction of Time at Home		0.85-1.0	0.85-1.0	0.72-1.0	0.72-1.0	0.73

* 95th percentile breathing rates for 3rd trimester and infants and 80th percentile for children and adults.

Non-Cancer Hazards

Potential non-cancer health hazards from TAC exposure are expressed in terms of a hazard index (HI), which is the ratio of the TAC concentration to a reference exposure level (REL). OEHHA has defined acceptable concentration levels for contaminants that pose non-cancer health hazards. TAC concentrations below the REL are not expected to cause adverse health impacts, even for sensitive individuals. The total HI is calculated as the sum of the HIs for each TAC evaluated and the total HI is compared to the BAAQMD significance thresholds to determine whether a significant non-cancer health impact from a project would occur.

Typically, for residential projects located near roadways with substantial TAC emissions, the primary TAC of concern with non-cancer health effects is diesel particulate matter (DPM). For DPM, the chronic inhalation REL is 5 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$).

Annual PM_{2.5} Concentrations

While not a TAC, fine particulate matter (PM_{2.5}) has been identified by the BAAQMD as a pollutant with potential non-cancer health effects that should be included when evaluating potential community health impacts under the California Environmental Quality Act (CEQA). The thresholds of significance for PM_{2.5} (project level and cumulative) are in terms of an increase in the annual average concentration. When considering PM_{2.5} impacts, the contribution from all sources of PM_{2.5} emissions should be included. For projects with potential impacts from nearby local roadways, the PM_{2.5} impacts should include those from vehicle exhaust emissions, PM_{2.5} generated from vehicle tire and brake wear, and fugitive emissions from re-suspended dust on the roads.

Attachment 4: Construction Health Risk Analysis

Charcot Avenue Road Extension, San Jose, California

DPM Emissions and Modeling Emission Rates - Without Mitigation

Emissions Model Year	Activity	DPM (ton/year)	Area Source	DPM Emissions			Modeled Area (m ²)	DPM Emission Rate (g/s/m ²)
				(lb/yr)	(lb/hr)	(g/s)		
2019	Construction West Road (B)	0.0278	DPM_R_W	55.6	0.01694	2.13E-03	8,735	2.44E-07
	Construction East Road	0.0217	DPM_R_E1	43.4	0.01322	1.67E-03	9,922	1.68E-07
	Construction East Road Alt	0.0186	DPM_R_E2	37.3	0.01135	1.43E-03	9,922	1.44E-07
	Construction Bridge	0.0791	DPM_B	158.3	0.04818	6.07E-03	3,584	1.69E-06
	Total	0.1473		294.6	0.0897	0.0113		

Operation Hours

hr/day =	9	(7am - 4pm)
days/yr =	365	
hours/year =	3285	

Charcot Avenue Road Extension, San Jose, California

PM2.5 Fugitive Dust Emissions for Modeling - Without Mitigation

Construction Year	Activity	Area Source	PM2.5 Emissions (ton/year)	PM2.5 Emissions			Modeled Area (m ²)	PM2.5 Emission Rate (g/s/m ²)
				(lb/yr)	(lb/hr)	(g/s)		
2019	Construction West Road (B)	FUG_R_W	0.0311	62.2	0.01894	2.39E-03	8,735	2.73E-07
	Construction East Road	FUG_R_E1	0.0263	52.6	0.01602	2.02E-03	9,922	2.03E-07
	Construction East Road Alt	FUG_R_E2	0.0229	45.8	0.01393	1.76E-03	9,922	1.77E-07
	Construction Bridge	FUG_B	0.3890	777.9	0.23681	2.98E-02	3,584	8.33E-06
	Total		0.4693	938.5	0.2857	0.0360		

Operation Hours

hr/day =	9	(7am - 4pm)
days/yr =	365	
hours/year =	3285	

Charcot Avenue Road Extension, San Jose, California
Proposed Roadway Design (4 Lanes)

Maximum Impacts at Construction MEI (Residential) - Unmitigated (2019 rev)

Emissions Year						Maximum Annual PM2.5 Concentration (µg/m³)
	Maximum Concentrations		Cancer Risk (per million)		Hazard Index	
	Exhaust PM10/DPM (µg/m³)	Fugitive PM2.5 (µg/m³)				
	Infant/Child	Adult	(-)			
2019-2020	0.0254	0.0787	4.2	0.1	0.005	0.10

Maximum Impacts at Orchard School District

Construction Year	Unmitigated Emissions				
	Maximum Concentrations		Child Cancer Risk (per million)	Hazard Index (-)	Maximum Annual PM2.5 Concentration ($\mu\text{g}/\text{m}^3$)
	Exhaust PM2.5/DPM ($\mu\text{g}/\text{m}^3$)	Fugitive PM2.5 ($\mu\text{g}/\text{m}^3$)			
2019-2020	0.0359	0.1410	1.0	0.01	0.17

Charcot Avenue Road Extension, San Jose, California
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction of 4 lane design
Impacts at Off-Site MEI Location - 1.5 meter receptor height

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor (mg/kg-day)⁻¹

ASF = Age sensitivity factor for specified age group

ED = Exposure duration (years)

AT = Averaging time for lifetime cancer risk (years)

FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10⁻⁶

Where: C_{air} = concentration in air (µg/m³)

DBR = daily breathing rate (L/kg body weight-day)

A = Inhalation absorption factor

EF = Exposure frequency (days/year)

10⁻⁶ = Conversion factor

Values

Age --> Parameter	Infant/Child				Adult
	3rd Trimester	0 - 2	2 - 9	2 - 16	16 - 30
ASF =	10	10	3	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	631	572	261
A =	1	1	1	1	1
EF =	350	350	350	350	350
AT =	70	70	70	70	70
FAH =	1.00	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

Exposure Year	Exposure Duration (years)	Age	Infant/Child - Exposure Information			Infant/Child Cancer Risk (per million)	Adult - Exposure Information			Adult Cancer Risk (per million)	Fugitive PM2.5	Total PM2.5
			DPM Conc (ug/m3)		Age Sensitivity Factor		Modeled		Age Sensitivity Factor			
			Year	Annual			DPM Conc (ug/m3)	Year				
0	0.25	-0.25 - 0*	-	-	10	-	-	-	-	-		
1	1	0 - 1	2019	0.0254	10	4.18	2019	0.0254	1	0.07	0.0787	0.1041
2	1	1 - 2				0.00				0.00		
3	1	2 - 3				0.00				0.00		
4	1	3 - 4				0.00				0.00		
5	1	4 - 5				0.00				0.00		
6	1	5 - 6				0.00				0.00		
7	1	6 - 7				0.00				0.00		
8	1	7 - 8				0.00				0.00		
9	1	8 - 9				0.00				0.00		
10	1	9 - 10				0.00				0.00		
11	1	10 - 11				0.00				0.00		
12	1	11 - 12				0.00				0.00		
13	1	12 - 13				0.00				0.00		
14	1	13 - 14				0.00				0.00		
15	1	14 - 15				0.00				0.00		
16	1	15 - 16				0.00				0.00		
17	1	16-17				0.00				0.00		
18	1	17-18				0.00				0.00		
19	1	18-19				0.00				0.00		
20	1	19-20				0.00				0.00		
21	1	20-21				0.00				0.00		
22	1	21-22				0.00				0.00		
23	1	22-23				0.00				0.00		
24	1	23-24				0.00				0.00		
25	1	24-25				0.00				0.00		
26	1	25-26				0.00				0.00		
27	1	26-27				0.00				0.00		
28	1	27-28				0.00				0.00		
29	1	28-29				0.00				0.00		
30	1	29-30				0.00				0.00		
Total Increased Cancer Risk						4.18				0.07		

* Third trimester of pregnancy

Orchard School District, San Jose CA - Construction Impacts - Without Mitigation
Maximum DPM Cancer Risk Calculations From Construction of 4 lane roadway design
Daycare - 1.0 meters - Child Exposure

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor (mg/kg-day)⁻¹
 ASF = Age sensitivity factor for specified age group
 ED = Exposure duration (years)
 AT = Averaging time for lifetime cancer risk (years)
 FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10⁻⁶

Where: C_{air} = concentration in air (µg/m³)
 DBR = daily breathing rate (L/kg body weight-day)
 A = Inhalation absorption factor
 EF = Exposure frequency (days/year)
 10⁻⁶ = Conversion factor

Values

Age --> Parameter	Infant/Child				Adult
	3rd Trimester	0 - 2	2 - 9	2 - 16	16 - 30
ASF =	10	10	3	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	631	572	261
A =	1	1	1	1	1
EF =	350	350	350	350	350
AT =	70	70	70	70	70
FAH =	1.00	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

Exposure Year	Exposure Duration (years)	Child - Exposure Information			Child Cancer Risk (per million)	Maximum	
		DPM Conc (ug/m3)		Age* Sensitivity Factor		Fugitive	Total
		Year	Annual			PM2.5	PM2.5
1	1	2019-2020	0.0359	3	1.0	0.1410	0.1697

* Children assumed to be from 5 to 13 years of age

Charcot Avenue Road Extension, San Jose, California
Alternative Roadway Design (3 Lanes)

Maximum Impacts at Construction MEI (Residential) - Unmitigated (2019 rev)

Emissions Year						Maximum Annual PM2.5 Concentration (µg/m³)
	Maximum Concentrations		Cancer Risk (per million)		Hazard Index (-)	
	Exhaust PM10/DPM (µg/m³)	Fugitive PM2.5 (µg/m³)				
2019-2020	0.0223	0.0708	3.7	0.1	0.004	0.09

Maximum Impacts at Orchard School District

Construction Year	Unmitigated Emissions				
	Maximum Concentrations		Child Cancer Risk (per million)	Hazard Index (-)	Maximum Annual PM2.5 Concentration ($\mu\text{g}/\text{m}^3$)
	Exhaust PM2.5/DPM ($\mu\text{g}/\text{m}^3$)	Fugitive PM2.5 ($\mu\text{g}/\text{m}^3$)			
2019-2020	0.0313	0.1246	0.9	0.01	0.15

Charcot Avenue Road Extension, San Jose, California
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction of 3 lane design
Impacts at Off-Site MEI Location - 1.5 meter receptor height

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor (mg/kg-day)⁻¹

ASF = Age sensitivity factor for specified age group

ED = Exposure duration (years)

AT = Averaging time for lifetime cancer risk (years)

FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10⁻⁶

Where: C_{air} = concentration in air (µg/m³)

DBR = daily breathing rate (L/kg body weight-day)

A = Inhalation absorption factor

EF = Exposure frequency (days/year)

10⁻⁶ = Conversion factor

Values

Age --> Parameter	Infant/Child				Adult
	3rd Trimester	0 - 2	2 - 9	2 - 16	16 - 30
ASF =	10	10	3	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	631	572	261
A =	1	1	1	1	1
EF =	350	350	350	350	350
AT =	70	70	70	70	70
FAH =	1.00	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

Exposure Year	Exposure Duration (years)	Age	Infant/Child - Exposure Information			Infant/Child Cancer Risk (per million)	Adult - Exposure Information			Adult Cancer Risk (per million)	Fugitive PM2.5	Total PM2.5
			DPM Conc (ug/m3)		Age Sensitivity Factor		Modeled		Age Sensitivity Factor			
			Year	Annual			DPM Conc (ug/m3)	Year				
0	0.25	-0.25 - 0*	-	-	10	-	-	-	-	-		
1	1	0 - 1	2019	0.0223	10	3.66	2019	0.0223	1	0.06	0.0708	0.0931
2	1	1 - 2				0.00				0.00		
3	1	2 - 3				0.00				0.00		
4	1	3 - 4				0.00				0.00		
5	1	4 - 5				0.00				0.00		
6	1	5 - 6				0.00				0.00		
7	1	6 - 7				0.00				0.00		
8	1	7 - 8				0.00				0.00		
9	1	8 - 9				0.00				0.00		
10	1	9 - 10				0.00				0.00		
11	1	10 - 11				0.00				0.00		
12	1	11 - 12				0.00				0.00		
13	1	12 - 13				0.00				0.00		
14	1	13 - 14				0.00				0.00		
15	1	14 - 15				0.00				0.00		
16	1	15 - 16				0.00				0.00		
17	1	16-17				0.00				0.00		
18	1	17-18				0.00				0.00		
19	1	18-19				0.00				0.00		
20	1	19-20				0.00				0.00		
21	1	20-21				0.00				0.00		
22	1	21-22				0.00				0.00		
23	1	22-23				0.00				0.00		
24	1	23-24				0.00				0.00		
25	1	24-25				0.00				0.00		
26	1	25-26				0.00				0.00		
27	1	26-27				0.00				0.00		
28	1	27-28				0.00				0.00		
29	1	28-29				0.00				0.00		
30	1	29-30				0.00				0.00		
Total Increased Cancer Risk						3.66				0.06		

* Third trimester of pregnancy

Orchard School District, San Jose CA - Construction Impacts - Without Mitigation
Maximum DPM Cancer Risk Calculations From Construction of 3 lane roadway design
Daycare - 1.0 meters - Child Exposure

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor (mg/kg-day)⁻¹

ASF = Age sensitivity factor for specified age group

ED = Exposure duration (years)

AT = Averaging time for lifetime cancer risk (years)

FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10⁻⁶

Where: C_{air} = concentration in air (µg/m³)

DBR = daily breathing rate (L/kg body weight-day)

A = Inhalation absorption factor

EF = Exposure frequency (days/year)

10⁻⁶ = Conversion factor

Values

Age --> Parameter	Infant/Child				Adult
	3rd Trimester	0 - 2	2 - 9	2 - 16	16 - 30
ASF =	10	10	3	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	631	572	261
A =	1	1	1	1	1
EF =	350	350	350	350	350
AT =	70	70	70	70	70
FAH =	1.00	1.00	1.00	1.00	0.73

* 95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

Exposure Year	Exposure Duration (years)	Child - Exposure Information			Child Cancer Risk (per million)
		DPM Conc (ug/m3)		Age* Sensitivity Factor	
		Year	Annual		
1	1	2019-2020	0.0313	3	0.9

Maximum	
Fugitive	Total
PM2.5	PM2.5
0.1246	0.1497

* Children assumed to be from 5 to 13 years of age

Attachment 5: Charcot Avenue Traffic Community Risk Modeling Emissions and Health Risk Calculations

Santa Clara (SF) - 2020 - Annual.EC.txt																				
File Name:	Santa Clara (SF) - 2020 - Annual.EC																			
CT-EMFAC Version:	6.0.0.18677																			
Run Date:	1/21/2019 1:44:59 PM																			
Area:	Santa Clara (SF)																			
Analysis Year:	2020																			
Season:	Annual																			
=====																				
Vehicle Category	VMT Fraction Across Category	Diesel VMT Fraction within Category																		
Truck 1	0.020	0.523																		
Truck 2	0.032	0.945																		
Non-Truck	0.948	0.012																		
=====																				
Road Length:	0.4 miles																			
Volume:	770 vehicles per hour																			
Number of Hours:	10 hours																			
Avg. Idling Time:	1 minutes per vehicle																			
Tot. Idling Time:	128.33 hours																			
VMT Distribution by Speed (mph):																				
5	0.00%																			
10	0.00%																			
15	0.00%																			
20	0.00%																			
25	100.00%																			
30	0.00%																			
35	0.00%																			
40	0.00%																			
45	0.00%																			
50	0.00%																			
55	0.00%																			
60	0.00%																			
65	0.00%																			
70	0.00%																			
75	0.00%																			
=====																				
Summary of Project Emissions																				
Pollutant Name	Running Exhaust (grams)	Idling Exhaust (grams)	Running Loss (grams)	Tire Wear (grams)	Brake Wear (grams)	Total (grams)	Total (US tons)													
ROG	156.6	81.7	220.9	-	-	459.1	<0.001													
TOG	208.1	110.6	220.9	-	-	539.6	<0.001													
CO	3,468.8	768.6	-	-	-	4,237.4	0.005													
NOx	934.2	300.9	-	-	-	1,235.1	0.001													
CO2	1,351,533.6	351,770.2	-	-	-	1,703,303.8	1.875													
CH4	42.9	24.7	-	-	-	67.6	<0.001													
PM10	12.7	5.3	-	26.6	125.5	170.2	<0.001													
PM2.5	11.9	5.0	-	6.7	53.8	77.3	<0.001													
Benzene	4.9	2.5	2.2	-	-	9.6	<0.001													
Acrolein	0.2	0.1	-	-	-	0.3	<0.001													
Acetaldehyde	3.5	1.4	-	-	-	4.9	<0.001													
Formaldehyde	8.5	3.6	-	-	-	12.1	<0.001													
Butadiene	1.0	0.5	0.0	-	-	1.6	<0.001													
Naphthalene	0.1	<0.1	0.3	-	-	0.5	<0.001													
PM	0.2	0.1	-	-	-	0.3	<0.001													
Diesel PM	5.3	1.8	-	-	-	7.1	<0.001													
DEOG	37.6	13.8	-	-	-	51.4	<0.001													
=====																				
END																				

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Santa Clara (SF) - 2020 - Annual.EC.txt																				
File Name:	Santa Clara (SF) - 2020 - Annual.EC																			
CT-EMFAC Version:	6.0.0.18677																			
Run Date:	1/22/2019 6:37:13 PM																			
Area:	Santa Clara (SF)																			
Analysis Year:	2020																			
Season:	Annual																			
=====																				
Vehicle Category	VMT Fraction Across Category	Diesel VMT Fraction within Category																		
Truck 1	0.020	0.528																		
Truck 2	0.032	0.945																		
Non-Truck	0.948	0.012																		
=====																				
Road Length:	0.4 miles																			
Volume:	800 vehicles per hour																			
Number of Hours:	10 hours																			
Avg. Idling Time:	1 minutes per vehicle																			
Tot. Idling Time:	133.33 hours																			
VMT Distribution by Speed (mph):																				
5	0.00%																			
10	0.00%																			
15	0.00%																			
20	0.00%																			
25	100.00%																			
30	0.00%																			
35	0.00%																			
40	0.00%																			
45	0.00%																			
50	0.00%																			
55	0.00%																			
60	0.00%																			
65	0.00%																			
70	0.00%																			
75	0.00%																			
=====																				
Summary of Project Emissions																				
Pollutant Name	Running Exhaust (grams)	Idling Exhaust (grams)	Running Loss (grams)	Tire Wear (grams)	Brake Wear (grams)	Total (grams)	Total (US tons)													
HC	192.1	103.6	214.6	-	-	510.3	<0.001													
ROG	162.7	84.9	229.5	-	-	477.0	<0.001													
TOG	216.3	115.1	229.5	-	-	560.9	<0.001													
CO	3,603.9	798.6	-	-	-	4,402.5	0.005													
NOx	919.6	312.6	-	-	-	1,232.2	0.001													
CO2	1,404,190.9	365,475.5	-	-	-	1,769,666.4	1.951													
CH4	44.5	25.7	-	-	-	70.2	<0.001													
PM10	13.2	5.5	-	27.6	130.4	176.8	<0.001													
PM2.5	12.4	5.2	-	6.9	55.9	80.3	<0.001													
Benzene	5.1	2.6	2.3	-	-	10.0	<0.001													
Acrolein	0.2	0.1	-	-	-	0.4	<0.001													
Acetaldehyde	3.6	1.4	-	-	-	5.0	<0.001													
Formaldehyde	8.8	3.8	-	-	-	12.6	<0.001													
Butadiene	1.1	0.6	0.0	-	-	1.6	<0.001													
Naphthalene	0.1	<0.1	0.3	-	-	0.5	<0.001													
PM	0.2	0.1	-	-	-	0.3	<0.001													
Diesel PM	5.5	1.9	-	-	-	7.4	<0.001													
DEOG	39.1	14.3	-	-	-	53.4	<0.001													
=====																				
END																				

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Santa Clara (SF) - 2020 - Annual.EC TOG.txt

File Name: Santa Clara (SF) - 2020 - Annual.EC
 CT-EMFAC Version: 6.0.0.18677
 Run Date: 1/22/2019 5:30:19 PM
 Area: Santa Clara (SF)
 Analysis Year: 2020
 Season: Annual

Vehicle Category	VMT Fraction Across Category	Diesel VMT Fraction within Category
Truck 1	0.000	0.523
Truck 2	0.000	0.945
Non-Truck	1.000	0.012

Road Length: 0.4 miles
 Volume: 760 vehicles per hour
 Number of Hours: 10 hours
 Avg. Idling Time: 1 minutes per vehicle
 Tot. Idling Time: 126.67 hours

VMT Distribution by Speed (mph):

5	0.00%
10	0.00%
15	0.00%
20	0.00%
25	100.00%
30	0.00%
35	0.00%
40	0.00%
45	0.00%
50	0.00%
55	0.00%
60	0.00%
65	0.00%
70	0.00%
75	0.00%

Summary of Project Emissions

Pollutant Name	Running Exhaust (grams)	Idling Exhaust (grams)	Running Loss (grams)	Tire Wear (grams)	Brake Wear (grams)	Total (grams)	Total (US tons)
TOG	177.5	79.3	212.1	-	-	468.9	<0.001
Benzene	4.3	1.9	2.1	-	-	8.3	<0.001
Acrolein	0.2	<0.1	-	-	-	0.3	<0.001
Acetaldehyde	1.1	0.6	-	-	-	1.6	<0.001
Formaldehyde	3.7	1.8	-	-	-	5.5	<0.001
Butadiene	1.0	0.4	0.0	-	-	1.4	<0.001
Naphthalene	0.1	<0.1	0.3	-	-	0.5	<0.001
POM	0.2	<0.1	-	-	-	0.2	<0.001
Diesel PM	1.6	0.6	-	-	-	2.1	<0.001
DEOG	4.3	3.3	-	-	-	7.6	<0.001

END

Santa Clara (SF) - 2025 - Annual.EC.txt

File Name: Santa Clara (SF) - 2025 - Annual.EC
 CT-EMFAC Version: 6.0.0.18677
 Run Date: 1/21/2019 1:50:17 PM
 Area: Santa Clara (SF)
 Analysis Year: 2025
 Season: Annual

Vehicle Category	VMT Fraction Across Category	Diesel VMT Fraction Within Category
Truck 1	0.018	0.591
Truck 2	0.035	0.945
Non-Truck	0.947	0.013

Road Length: 0.4 miles
 Volume: 1,000 vehicles per hour
 Number of Hours: 10 hours
 Avg. Idling Time: 1 minutes per vehicle
 Tot. Idling Time: 166.67 hours

VMT Distribution by Speed (mph):

5	0.00%
10	0.00%
15	0.00%
20	0.00%
25	100.00%
30	0.00%
35	0.00%
40	0.00%
45	0.00%
50	0.00%
55	0.00%
60	0.00%
65	0.00%
70	0.00%
75	0.00%

Summary of Project Emissions

Pollutant Name	Running Exhaust (grams)	Idling Exhaust (grams)	Running Loss (grams)	Tire Wear (grams)	Brake Wear (grams)	Total (grams)	Total (US tons)
HC	173.1	94.4	211.9	-	-	479.3	<0.001
ROG	144.8	77.9	226.5	-	-	449.2	<0.001
TOG	193.8	105.1	226.5	-	-	525.4	<0.001
CO	3,229.9	721.5	-	-	-	3,951.4	0.004
NOX	727.1	271.3	-	-	-	998.4	0.001
CO2	1,486,081.8	381,917.7	-	-	-	1,867,999.5	2.059
CH4	41.2	22.9	-	-	-	64.1	<0.001
PM10	11.9	6.1	-	34.8	162.8	215.6	<0.001
PM2.5	11.1	5.6	-	8.7	69.8	95.2	<0.001
Benzene	4.6	2.4	2.3	-	-	9.3	<0.001
Acrolein	0.2	0.1	-	-	-	0.3	<0.001
Acetaldehyde	3.2	1.4	-	-	-	4.5	<0.001
Formaldehyde	7.8	3.6	-	-	-	11.4	<0.001
Butadiene	1.0	0.5	0.0	-	-	1.5	<0.001
Naphthalene	0.1	<0.1	0.3	-	-	0.5	<0.001
POM	0.2	0.1	-	-	-	0.3	<0.001
Diesel PM	2.8	1.7	-	-	-	4.5	<0.001
DEOG	33.6	14.1	-	-	-	47.7	<0.001

END

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Santa Clara (SF) - 2025 - Annual.EC TOG.txt

Non-Diesel Vehicle TOG Emissions

File Name: Santa Clara (SF) - 2025 - Annual.EC
 CT-EMFAC Version: 6.0.0.18677
 Run Date: 1/21/2019 1:54:27 PM
 Area: Santa Clara (SF)
 Analysis Year: 2025
 Season: Annual

Vehicle Category	VMT Fraction Across Category	Diesel VMT Fraction Within Category
Truck 1	0.000	0.591
Truck 2	0.000	0.945
Non-Truck	1.000	0.013

Road Length: 0.4 miles
 Volume: 944 vehicles per hour
 Number of Hours: 10 hours
 Avg. Idling Time: 1 minutes per vehicle
 Tot. Idling Time: 157.33 hours

VMT Distribution by Speed (mph):

5	0.00%
10	0.00%
15	0.00%
20	0.00%
25	100.00%
30	0.00%
35	0.00%
40	0.00%
45	0.00%
50	0.00%
55	0.00%
60	0.00%
65	0.00%
70	0.00%
75	0.00%

Summary of Project Emissions

Pollutant Name	Running Exhaust (grams)	Idling Exhaust (grams)	Running Loss (grams)	Tire Wear (grams)	Brake Wear (grams)	Total (grams)	Total (US tons)
TOG	160.7	72.8	209.1	-	-	442.6	<0.001
Benzene	3.9	1.8	2.1	-	-	7.7	<0.001
Acrolein	0.2	<0.1	-	-	-	0.3	<0.001
Acetaldehyde	0.9	0.5	-	-	-	1.5	<0.001
Formaldehyde	3.3	1.7	-	-	-	5.0	<0.001
Butadiene	0.9	0.4	0.0	-	-	1.3	<0.001
Naphthalene	0.1	<0.1	0.3	-	-	0.4	<0.001
POM	0.1	<0.1	-	-	-	0.2	<0.001
Diesel PM	1.1	0.4	-	-	-	1.5	<0.001
DEOG	3.5	2.9	-	-	-	6.4	<0.001

END

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Santa Clara (SF) - 2040 - Annual1.EC.txt

File Name: Santa Clara (SF) - 2040 - Annual1.EC
 CT-EMFAC Version: 6.0.0.18677
 Run Date: 1/21/2019 1:56:16 PM
 Area: Santa Clara (SF)
 Analysis Year: 2040
 Season: Annual

Vehicle Category	VMT Fraction Across Category	Diesel VMT Fraction Within Category
Truck 1	0.016	0.669
Truck 2	0.038	0.946
Non-Truck	0.946	0.014

Road Length: 0.4 miles
 Volume: 1,320 vehicles per hour
 Number of Hours: 10 hours
 Avg. Idling Time: 1 minutes per vehicle
 Tot. Idling Time: 220.00 hours

VMT Distribution by Speed (mph):

5	0.00%
10	0.00%
15	0.00%
20	100.00%
25	0.00%
30	0.00%
35	0.00%
40	0.00%
45	0.00%
50	0.00%
55	0.00%
60	0.00%
65	0.00%
70	0.00%
75	0.00%

Summary of Project Emissions

Pollutant Name	Running Exhaust (grams)	Idling Exhaust (grams)	Running Loss (grams)	Tire Wear (grams)	Brake Wear (grams)	Total (grams)	Total (US tons)
HC	222.2	84.0	199.9	-	-	506.1	<0.001
ROG	190.1	71.8	213.7	-	-	475.6	<0.001
TOG	251.4	94.4	213.7	-	-	559.5	<0.001
CO	2,973.4	637.2	-	-	-	3,610.6	0.004
NOx	1,039.1	250.1	-	-	-	1,289.2	0.001
CO2	1,838,407.0	392,194.2	-	-	-	2,230,601.1	2.459
CH4	51.0	18.7	-	-	-	69.7	<0.001
PM10	9.2	3.7	-	46.3	214.3	273.5	<0.001
PM2.5	8.5	3.4	-	11.6	91.9	115.4	<0.001
Benzene	6.0	2.2	2.1	-	-	10.4	<0.001
Acrolein	0.3	0.1	-	-	-	0.4	<0.001
Acetaldehyde	5.3	1.6	-	-	-	6.9	<0.001
Formaldehyde	12.4	3.9	-	-	-	16.3	<0.001
Butadiene	1.2	0.5	0.0	-	-	1.7	<0.001
Naphthalene	0.2	<0.1	0.3	-	-	0.6	<0.001
POM	0.2	<0.1	-	-	-	0.3	<0.001
Diesel PM	2.1	1.2	-	-	-	3.3	<0.001
DEOG	59.6	16.8	-	-	-	76.3	<0.001

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Santa Clara (SF) - 2040 - Annual1.EC TOG.txt

Non-Diesel Vehicle TOG Emissions

File Name: Santa Clara (SF) - 2040 - Annual1.EC
 CT-EMFAC Version: 6.0.0.18677
 Run Date: 1/21/2019 2:01:44 PM
 Area: Santa Clara (SF)
 Analysis Year: 2040
 Season: Annual

Vehicle Category	VMT Fraction Across Category	Diesel VMT Fraction Within Category
Truck 1	0.000	0.669
Truck 2	0.000	0.946
Non-Truck	1.000	0.014

Road Length: 0.4 miles
 Volume: 1,241 vehicles per hour
 Number of Hours: 10 hours
 Avg. Idling Time: 1 minutes per vehicle
 Tot. Idling Time: 206.83 hours

VMT Distribution by Speed (mph):

5	0.00%
10	0.00%
15	0.00%
20	100.00%
25	0.00%
30	0.00%
35	0.00%
40	0.00%
45	0.00%
50	0.00%
55	0.00%
60	0.00%
65	0.00%
70	0.00%
75	0.00%

Summary of Project Emissions

Pollutant Name	Running Exhaust (grams)	Idling Exhaust (grams)	Running Loss (grams)	Tire Wear (grams)	Brake Wear (grams)	Total (grams)	Total (US tons)
TOG	192.7	65.5	204.6	-	-	462.8	<0.001
Benzene	4.8	1.6	2.0	-	-	8.5	<0.001
Acrolein	0.3	<0.1	-	-	-	0.3	<0.001
Acetaldehyde	1.2	0.5	-	-	-	1.7	<0.001
Formaldehyde	4.1	1.5	-	-	-	5.7	<0.001
Butadiene	1.1	0.4	0.0	-	-	1.5	<0.001
Naphthalene	0.1	<0.1	0.3	-	-	0.5	<0.001
POM	0.2	<0.1	-	-	-	0.2	<0.001
Diesel PM	0.3	<0.1	-	-	-	0.3	<0.001
DEOG	3.8	2.1	-	-	-	5.9	<0.001

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Charcot Ave, San Jose, CA
Operation - Proposed
DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions
Year = 2020

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	Average Speed (mph)	Average VPH Diesel Vehicles				
									Average Vehicles per Day	Diesel Vehicles/Day	Non-Truck	MDT	HDT
Prop-NB Charcot-North	Northbound Charcot Ave*	NW	2	186	42	12.7	3.4	25	4,000	208.3	46	42	121
Prop-SB Charcot-North	Southbound Charcot Ave*	SE	2	186	42	12.7	3.4	25	4,000	208.3	46	42	121
								Total	8,000	417	91	84	242
* Road segments north of Silk Wood Lane.									Fraction of Total Vehicles =		0.948	0.020	0.032
									Fraction Diesel in category =		0.012	0.523	0.945

DPM Emissions	
Daily Emissions (g/day)* =	7.38
Total Road Length (mi) =	0.40
Emissions per Diesel Vehicle (g/VMT) =	0.0443
Modeled Emission Rate (g/s) =	8.54E-05

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	g/s	Hour	% Per Hour	VPH	g/s
1	3.93%	8	1.16E-05	9	6.47%	1.91E-05	17	5.49%	11	1.62E-05
2	2.54%	5	7.51E-06	10	7.16%	2.12E-05	18	3.29%	7	9.73E-06
3	2.83%	6	8.36E-06	11	6.35%	1.88E-05	19	2.43%	5	1.71E-06
4	3.41%	7	1.01E-05	12	6.93%	2.05E-05	20	0.98%	2	2.90E-06
5	2.20%	5	6.49E-06	13	6.12%	1.81E-05	21	3.06%	6	9.05E-06
6	3.35%	7	9.90E-06	14	6.12%	1.81E-05	22	4.16%	9	1.23E-05
7	6.07%	13	1.79E-05	15	5.14%	1.52E-05	23	2.37%	5	7.00E-06
8	4.79%	10	1.42E-05	16	3.93%	1.16E-05	24	0.87%	2	2.56E-06
Total							208			

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	g/s	Hour	% Per Hour	VPH	g/s
1	3.93%	8	1.16E-05	9	6.47%	1.91E-05	17	5.49%	11	1.62E-05
2	2.54%	5	7.51E-06	10	7.16%	2.12E-05	18	3.29%	7	9.73E-06
3	2.83%	6	8.36E-06	11	6.35%	1.88E-05	19	2.43%	5	7.17E-06
4	3.41%	7	1.01E-05	12	6.93%	2.05E-05	20	0.98%	2	2.90E-06
5	2.20%	5	6.49E-06	13	6.12%	1.81E-05	21	3.06%	6	9.05E-06
6	3.35%	7	9.90E-06	14	6.12%	1.81E-05	22	4.16%	9	1.23E-05
7	6.07%	13	1.79E-05	15	5.14%	1.52E-05	23	2.37%	5	7.00E-06
8	4.79%	10	1.42E-05	16	3.93%	1.16E-05	24	0.87%	2	2.56E-06
Total								208		

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	Average Speed (mph)	Average VPH Diesel Vehicles				
									Average Vehicles per Day	Diesel Vehicles/Day	Non-Truck	MDT	HDT
Prop-NB Charcot-South	Northbound Charcot Ave*	NW	1	461	31	9.4	3.4	25	4,000	208.3	46	42	121
Prop-SB Charcot-South	Southbound Charcot Ave*	SE	1	461	31	9.4	3.4	25	4,000	208.3	46	42	121
								Total	8,000	417	91	84	242
* Road segments south of Silk Wood Lane.									Fraction of Total Vehicles = 0.948 0.020 0.032 Fraction Diesel in category = 0.012 0.523 0.945				

DPM Emissions	
Daily Emissions (g/day)* =	7.38
Total Road Length (mi) =	0.4
Emissions per Diesel Vehicle (g/VMT) =	0.0443
Modeled Emission Rate (g/s) =	8.54E-05

* daily emissions from CT-EMFAC

[illegible][illegible]

Operation - Proposed

Year =

2020

North Charcot

[illegible]

* Road segments north of Silk Wood Lane.

PM2.5 Emissions

Road Length (mi) = 0.4

Modeled Emission Rate (g/s) = 9.29E-04

Modeled Emission Rate (g/s) = 9.29E-04

Modeled Emission Rate (g/s) = 9.29E-04

Modeled Emission Rate (g/s) = 9.29E-04

* daily emissions from CT-EMFAC

2020 Hourly Traffic Volumes and PM2.5 Emissions - Prop-NB Charcot-North

[illegible]

2020 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - Prop-SB Charcot-North

[illegible]

[illegible]

PM2.5 Emissions	
Daily Emissions (g/day)* =	80.3
Road Length (mi) =	0.4
Emissions per Vehicle (g/VMT) =	0.0251
Modeled Emission Rate (g/s) =	9.29E-04

2020 Hourly Traffic Volumes and PM2.5 Emissions - Prop-NB Charcot-South

2020 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - Prop-SB Charcot-South

	% Per				% Per			% Per		
Hour	Hour	VPH	g/mile	Hour	Hour	g/mile	Hour	Hour	VPH	g/mile
1	1.15%	46	9.22E-05	9	7.11%	5.68E-04	17	7.38%	295	5.90E-04
2	0.42%	17	3.36E-05	10	4.39%	3.51E-04	18	8.17%	327	6.53E-04
3	0.41%	16	3.24E-05	11	4.67%	3.73E-04	19	5.70%	228	4.55E-04
4	0.27%	11	2.16E-05	12	5.89%	4.71E-04	20	4.27%	171	3.41E-04
5	0.50%	20	4.02E-05	13	6.15%	4.92E-04	21	3.26%	130	2.60E-04
6	0.91%	36	7.26E-05	14	6.03%	4.82E-04	22	3.30%	132	2.63E-04
7	3.80%	152	3.03E-04	15	7.01%	5.60E-04	23	2.46%	98	1.96E-04
8	7.76%	311	6.20E-04	16	7.13%	5.70E-04	24	1.87%	75	1.49E-04
Total							4,000			

[illegible]

[illegible]

TOG Exhaust Emissions	
Daily Emissions (g/day)* =	256.8
Road Length (mi) =	0.4
Emissions per Vehicle (g/VMT) =	0.0845
Modeled Emission Rate (g/s) =	2.97E-03

[illegible]

	% Per				% Per			% Per		
Hour	Hour	VPH	g/mile	Hour	Hour	g/mile	Hour	Hour	VPH	g/mile
1	1.15%	44	2.95E-04	9	7.11%	1.82E-03	17	7.38%	280	1.89E-03
2	0.42%	16	1.07E-04	10	4.39%	1.12E-03	18	8.17%	311	2.09E-03
3	0.41%	15	1.04E-04	11	4.67%	1.19E-03	19	5.70%	216	1.46E-03
4	0.27%	10	6.89E-05	12	5.89%	1.50E-03	20	4.27%	162	1.09E-03
5	0.50%	19	1.28E-04	13	6.15%	1.57E-03	21	3.26%	124	8.32E-04
6	0.91%	35	2.32E-04	14	6.03%	1.54E-03	22	3.30%	125	8.43E-04
7	3.80%	144	9.70E-04	15	7.01%	1.79E-03	23	2.46%	93	6.27E-04
8	7.76%	295	1.98E-03	16	7.13%	1.82E-03	24	1.87%	71	4.77E-04
Total							3,800			

Operation - Proposed

Year = 2020

North Charcot

[illegible]

* Road segments north of Silk Wood Lane.

Daily Emissions (g/day)* = 212.1

Road Length (mi) = 0.4

per Vehicle (g/VMT) = 0.069

Emissions per Vehicle (g/VMT) = 0.0698

Modeled Emission Rate (g/s) = 2.45E-0

* daily emisissions from CT-EMFAC

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	g/s	Hour	% Per Hour	VPH	g/s
1	1.15%	44	9.79E-05	9	7.11%	6.04E-04	17	7.38%	280	6.27E-04
2	0.42%	16	3.57E-05	10	4.39%	3.73E-04	18	8.17%	311	6.94E-04
3	0.41%	15	3.45E-05	11	4.67%	3.96E-04	19	5.70%	216	4.84E-04
4	0.27%	10	2.29E-05	12	5.89%	5.00E-04	20	4.27%	162	3.63E-04
5	0.50%	19	4.27E-05	13	6.15%	5.22E-04	21	3.26%	124	2.76E-04
6	0.91%	35	7.71E-05	14	6.03%	5.12E-04	22	3.30%	125	2.80E-04
7	3.80%	144	3.22E-04	15	7.01%	5.95E-04	23	2.46%	93	2.08E-04
8	7.76%	295	6.59E-04	16	7.13%	6.06E-04	24	1.87%	71	1.58E-04
Total							3,800			

[illegible]

[illegible]

TOG Evaporative Emissions	
Daily Emissions (g/day)* =	212.1
Road Length (mi) =	0.4
Emissions per Vehicle (g/VMT) =	0.0698
Modeled Emission Rate (g/s) =	2.45E-03

	% Per			% Per		% Per				
Hour	Hour	VPH	g/s	Hour	g/s	Hour	Hour	VPH	g/s	
1	1.15%	44	2.43E-04	9	7.11%	1.50E-03	17	7.38%	280	1.56E-03
2	0.42%	16	8.87E-05	10	4.39%	9.26E-04	18	8.17%	311	1.72E-03
3	0.41%	15	8.56E-05	11	4.67%	9.85E-04	19	5.70%	216	1.20E-03
4	0.27%	10	5.69E-05	12	5.89%	1.24E-03	20	4.27%	162	9.02E-04
5	0.50%	19	1.06E-04	13	6.15%	1.30E-03	21	3.26%	124	6.87E-04
6	0.91%	35	1.92E-04	14	6.03%	1.27E-03	22	3.30%	125	6.96E-04
7	3.80%	144	8.01E-04	15	7.01%	1.48E-03	23	2.46%	93	5.18E-04
8	7.76%	295	1.64E-03	16	7.13%	1.51E-03	24	1.87%	71	3.94E-04
Total								3,800		

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.15%	44	2.43E-04	9	7.11%	1.50E-03	17	7.38%	280	1.56E-03
2	0.42%	16	8.87E-05	10	4.39%	9.26E-04	18	8.17%	311	1.72E-03
3	0.41%	15	8.56E-05	11	4.67%	9.85E-04	19	5.70%	216	1.20E-03
4	0.27%	10	5.69E-05	12	5.89%	1.24E-03	20	4.27%	162	9.02E-04
5	0.50%	19	1.06E-04	13	6.15%	1.30E-03	21	3.26%	124	6.87E-04
6	0.91%	35	1.92E-04	14	6.03%	1.27E-03	22	3.30%	125	6.96E-04
7	3.80%	144	8.01E-04	15	7.01%	1.48E-03	23	2.46%	93	5.18E-04
8	7.76%	295	1.64E-03	16	7.13%	1.51E-03	24	1.87%	71	3.94E-04
Total							3,800			

Operation - Proposed

Year = 2020

North Charcot

[illegible]

* Road segments north of Silk Wood Lane.

Daily Emissions (g/day)* = 48.9

Road Length (mi) = 0.4

per Vehicle (g/VMT) = 0.015

Emissions per Vehicle (g/VMT) = 0.0153

Modeled Emission Rate (g/s) = 5.66E-04

* daily emisissions from CT-EMFAC

2020 Hourly Traffic Volumes and Fugitive PM2.5 Emissions - Prop-NB Charcot-North

	% Per			% Per		% Per				
Hour	Hour	VPH	g/s	Hour	g/s	Hour	Hour	VPH	g/s	
1	1.15%	46	2.26E-05	9	7.11%	1.39E-04	17	7.38%	295	1.44E-04
2	0.42%	17	8.22E-06	10	4.39%	8.59E-05	18	8.17%	327	1.60E-04
3	0.41%	16	7.94E-06	11	4.67%	9.13E-05	19	5.70%	228	1.11E-04
4	0.27%	11	5.28E-06	12	5.89%	1.15E-04	20	4.27%	171	8.36E-05
5	0.50%	20	9.84E-06	13	6.15%	1.20E-04	21	3.26%	130	6.37E-05
6	0.91%	36	1.78E-05	14	6.03%	1.18E-04	22	3.30%	132	6.45E-05
7	3.80%	152	7.43E-05	15	7.01%	1.37E-04	23	2.46%	98	4.81E-05
8	7.76%	311	1.52E-04	16	7.13%	1.40E-04	24	1.87%	75	3.65E-05
Total							4,000			

2020 Hourly Traffic Volumes Per Direction and Fugitive PM2.5 Emissions - Prop-SB Charcot-North

[illegible]

[illegible]

Road PM2.5 Fugitive Emissions	
Daily Emissions (g/day)* =	48.9
Road Length (mi) =	0.4
Emissions per Vehicle (g/VMT) =	0.0153
Modeled Emission Rate (g/s) =	5.66E-04

[illegible][illegible]

[illegible]

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	Average Speed (mph)	Average VPH Diesel Vehicles				
									Average Vehicles per Day	Diesel Vehicles/ Day	Non-Truck	MDT	HDT
Prop-NB Charcot-South	Northbound Charcot Ave*	NW	1	461	31	9.4	3.4	25	5,000	280.1	62	53	165
Prop-SB Charcot-South	Southbound Charcot Ave*	SE	1	461	31	9.4	3.4	25	5,000	280.1	62	53	165
								Total	10,000	560	123	106	331
* Road segments south of Silk Wood Lane.									Fraction of Total Vehicles = 0.947 Fraction Diesel in category = 0.013				
									0.018 0.591 0.945				

DPM Emissions	
Daily Emissions (g/day)* =	4.5
Total Road Length (mi) =	0.4
Emissions per Diesel Vehicle (g/VTM) =	0.0201
Modeled Emission Rate (g/s) =	5.21E-05

2025 Hourly Diesel Traffic Volumes and DPM Emissions - Prop-NB Charcot-South

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	g/s	Hour	% Per Hour	VPH	g/s
1	3.93%	11	1.76E-05	9	6.41%	2.87E-05	17	5.55%	16	2.49E-05
2	2.62%	7	1.17E-05	10	7.36%	3.30E-05	18	3.16%	9	1.41E-05
3	2.85%	8	1.28E-05	11	6.34%	2.84E-05	19	2.36%	7	1.06E-05
4	3.31%	9	1.48E-05	12	6.92%	3.10E-05	20	0.87%	2	3.87E-06
5	2.17%	6	9.70E-06	13	6.29%	2.82E-05	21	3.09%	9	1.38E-05
6	3.36%	9	1.51E-05	14	6.23%	2.79E-05	22	4.12%	12	1.84E-05
7	6.00%	17	2.68E-05	15	5.15%	2.31E-05	23	2.58%	7	1.15E-05
8	4.58%	13	2.05E-05	16	3.84%	1.72E-05	24	0.92%	3	4.13E-06
Total							280			

2025 Hourly Diesel Traffic Volumes Per Direction and DPM Emissions - Prop-SB Charcot-South

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	g/s	Hour	% Per Hour	VPH	g/s
1	3.93%	11	1.76E-05	9	6.41%	2.87E-05	17	5.55%	16	2.49E-05
2	2.62%	7	1.17E-05	10	7.36%	3.30E-05	18	3.16%	9	1.41E-05
3	2.85%	8	1.28E-05	11	6.34%	2.84E-05	19	2.36%	7	1.06E-05
4	3.31%	9	1.48E-05	12	6.92%	3.10E-05	20	0.87%	2	3.87E-06
5	2.17%	6	9.70E-06	13	6.29%	2.82E-05	21	3.09%	9	1.38E-05
6	3.36%	9	1.51E-05	14	6.23%	2.79E-05	22	4.12%	12	1.84E-05
7	6.00%	17	2.68E-05	15	5.15%	2.31E-05	23	2.58%	7	1.15E-05
8	4.58%	13	2.05E-05	16	3.84%	1.72E-05	24	0.92%	3	4.13E-06
Total							280			

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.15%	57	4.42E-05	9	7.11%	2.73E-04	17	7.39%	369	2.84E-04
2	0.42%	21	1.62E-05	10	4.39%	1.68E-04	18	8.18%	409	3.14E-04
3	0.41%	20	1.57E-05	11	4.66%	1.79E-04	19	5.69%	285	2.19E-04
4	0.26%	13	9.99E-06	12	5.89%	2.26E-04	20	4.28%	214	1.64E-04
5	0.50%	25	1.91E-05	13	6.15%	2.36E-04	21	3.25%	163	1.25E-04
6	0.91%	45	3.48E-05	14	6.04%	2.32E-04	22	3.30%	165	1.27E-04
7	3.79%	189	1.45E-04	15	7.01%	2.69E-04	23	2.46%	123	9.45E-05
8	7.77%	388	2.98E-04	16	7.14%	2.74E-04	24	1.86%	93	7.16E-05
Total							5,000			

[illegible]

PM2.5 Emissions	
Daily Emissions (g/day)* =	95.2
Road Length (mi) =	0.4
Emissions per Vehicle (g/VMT) =	0.0238
Modeled Emission Rate (g/s) =	1.10E-03

2025 Hourly Traffic Volumes and PM2.5 Emissions - Prop-NB Charcot-South

2025 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - Prop-SB Charcot-South

[illegible]

Operation - Proposed

Year = 2025

North Charcot

[illegible]

* Road segments north of Silk Wood Lane.

Daily Emissions (g/day)* =	233.5
Road Length (mi) =	0.4
Emissions per Vehicle (g/VMT) =	0.0618
Modeled Emission Rate (g/s) =	2.70E-03

* daily emisissions from CT-EMFAC

	% Per			% Per		% Per				
Hour	Hour	VPH	g/s	Hour	g/s	Hour	Hour	VPH	g/s	
1	1.15%	54	1.08E-04	9	7.11%	6.70E-04	17	7.39%	349	6.96E-04
2	0.42%	20	3.97E-05	10	4.39%	4.13E-04	18	8.18%	386	7.70E-04
3	0.41%	19	3.85E-05	11	4.66%	4.39E-04	19	5.69%	269	5.36E-04
4	0.26%	12	2.45E-05	12	5.89%	5.55E-04	20	4.28%	202	4.03E-04
5	0.50%	23	4.68E-05	13	6.15%	5.79E-04	21	3.25%	154	3.07E-04
6	0.91%	43	8.54E-05	14	6.04%	5.69E-04	22	3.30%	156	3.11E-04
7	3.79%	179	3.57E-04	15	7.01%	6.61E-04	23	2.46%	116	2.32E-04
8	7.77%	367	7.32E-04	16	7.14%	6.73E-04	24	1.86%	88	1.76E-04
Total								4,720		

Westbound				Eastbound				Northbound			
Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	g/mile	Hour	% Per Hour	VPH	g/mile	
1	1.15%	54	1.08E-04	9	7.11%	6.70E-04	17	7.39%	349	6.96E-04	
2	0.42%	20	3.97E-05	10	4.39%	4.13E-04	18	8.18%	386	7.70E-04	
3	0.41%	19	3.85E-05	11	4.66%	4.39E-04	19	5.69%	269	5.36E-04	
4	0.26%	12	2.45E-05	12	5.89%	5.55E-04	20	4.28%	202	4.03E-04	
5	0.50%	23	4.68E-05	13	6.15%	5.79E-04	21	3.25%	154	3.07E-04	
6	0.91%	43	8.54E-05	14	6.04%	5.69E-04	22	3.30%	156	3.11E-04	
7	3.79%	179	3.57E-04	15	7.01%	6.61E-04	23	2.46%	116	2.32E-04	
8	7.77%	367	7.32E-04	16	7.14%	6.73E-04	24	1.86%	88	1.76E-04	
							Total	4,720			

South Charcot

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	Average Speed (mph)	Average Vehicles per Day
Prop-NB Charcot-South	Northbound Charcot Ave*	NW	1	461	31	9.4	1.3	25	4,720
Prop-SB Charcot-South	Southbound Charcot Ave*	SE	1	461	31	9.4	1.3	25	4,720
								Total	9,440

* Road segments south of Silk Wood Lane.

TOG Exhaust Emissions	
Daily Emissions (g/day)* =	233.5
Road Length (mi) =	0.4
Emissions per Vehicle (g/VMT) =	0.0618
Modeled Emission Rate (g/s) =	2.70E-03

* daily emisisions from CT-EMFAC

2025 Hourly Traffic Volumes and TOG Emissions - Prop-NB Charcot-South

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	g/s	Hour	% Per Hour	VPH	g/s
1	1.15%	54	2.67E-04	9	7.11%	1.65E-03	17	7.39%	349	1.72E-03
2	0.42%	20	9.80E-05	10	4.39%	1.02E-03	18	8.18%	386	1.90E-03
3	0.41%	19	9.48E-05	11	4.66%	1.08E-03	19	5.69%	269	1.32E-03
4	0.26%	12	6.04E-05	12	5.89%	1.37E-03	20	4.28%	202	9.93E-04
5	0.50%	23	1.15E-04	13	6.15%	1.43E-03	21	3.25%	154	7.56E-04
6	0.91%	43	2.11E-04	14	6.04%	1.40E-03	22	3.30%	156	7.66E-04
7	3.79%	179	8.80E-04	15	7.01%	1.63E-03	23	2.46%	116	5.72E-04
8	7.77%	367	1.80E-03	16	7.14%	1.66E-03	24	1.86%	88	4.33E-04
Total							4,720			

2025 Hourly Traffic Volumes Per Direction and TOG Emissions - Prop-SB Charcot-South

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.15%	54	2.67E-04	9	7.11%	1.65E-03	17	7.39%	349	1.72E-03
2	0.42%	20	9.80E-05	10	4.39%	1.02E-03	18	8.18%	386	1.90E-03
3	0.41%	19	9.48E-05	11	4.66%	1.08E-03	19	5.69%	269	1.32E-03
4	0.26%	12	6.04E-05	12	5.89%	1.37E-03	20	4.28%	202	9.93E-04
5	0.50%	23	1.15E-04	13	6.15%	1.43E-03	21	3.25%	154	7.56E-04
6	0.91%	43	2.11E-04	14	6.04%	1.40E-03	22	3.30%	156	7.66E-04
7	3.79%	179	8.80E-04	15	7.01%	1.63E-03	23	2.46%	116	5.72E-04
8	7.77%	367	1.80E-03	16	7.14%	1.66E-03	24	1.86%	88	4.33E-04
Total							4,720			

2025 Hourly Traffic Volumes Per Direction and TOG Evaporative Emissions - Prop-SB Charcot-North										
Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.15%	54	9.70E-05	9	7.11%	6.00E-04	17	7.39%	349	6.23E-04
2	0.42%	20	3.56E-05	10	4.39%	3.70E-04	18	8.18%	386	6.90E-04
3	0.41%	19	3.44E-05	11	4.66%	3.93E-04	19	5.69%	269	4.80E-04
4	0.26%	12	2.19E-05	12	5.89%	4.97E-04	20	4.28%	202	3.61E-04
5	0.50%	23	4.19E-05	13	6.15%	5.19E-04	21	3.25%	154	2.75E-04
6	0.91%	43	7.65E-05	14	6.04%	5.09E-04	22	3.30%	156	2.78E-04
7	3.79%	179	3.20E-04	15	7.01%	5.92E-04	23	2.46%	116	2.08E-04
8	7.77%	367	6.55E-04	16	7.14%	6.02E-04	24	1.86%	88	1.57E-04
							Total		4,720	

[illegible]

TOG Evaporative Emissions	
Daily Emissions (g/day)* =	209.1
Road Length (mi) =	0.4
Emissions per Vehicle (g/VMT) =	0.0554
Modeled Emission Rate (g/s) =	2.42E-03

2025 Hourly Traffic Volumes and TOG Evaporative Emissions - Prop-NB Charcot-South

2025 Hourly Traffic Volumes Per Direction and TOG Evaporative Emissions - Prop-SB Charcot-South

[illegible]

Operation - Proposed

Year = 2025

[illegible]

Road PM2.5 Fugitive Emissions	
Daily Emissions (g/day)* =	61.1
Road Length (mi) =	0.4
Emissions per Vehicle (g/VMT) =	0.0153
Modeled Emission Rate (g/s) =	7.07E-04

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	g/s	Hour	% Per Hour	VPH	g/s
1	1.15%	57	2.83E-05	9	7.11%	1.75E-04	17	7.39%	369	1.82E-04
2	0.42%	21	1.04E-05	10	4.39%	1.08E-04	18	8.18%	409	2.02E-04
3	0.41%	20	1.01E-05	11	4.66%	1.15E-04	19	5.69%	285	1.40E-04
4	0.26%	13	6.41E-06	12	5.89%	1.45E-04	20	4.28%	214	1.05E-04
5	0.50%	25	1.23E-05	13	6.15%	1.52E-04	21	3.25%	163	8.03E-05
6	0.91%	45	2.24E-05	14	6.04%	1.49E-04	22	3.30%	165	8.13E-05
7	3.79%	189	9.34E-05	15	7.01%	1.73E-04	23	2.46%	123	6.07E-05
8	7.77%	388	1.92E-04	16	7.14%	1.76E-04	24	1.86%	93	4.60E-05
							Total		5,000	

	% Per				% Per			% Per		
Hour	Hour	VPH	g/mile	Hour	Hour	g/mile	Hour	Hour	VPH	g/mile
1	1.15%	57	2.83E-05	9	7.11%	1.75E-04	17	7.39%	369	1.82E-04
2	0.42%	21	1.04E-05	10	4.39%	1.08E-04	18	8.18%	409	2.02E-04
3	0.41%	20	1.01E-05	11	4.66%	1.15E-04	19	5.69%	285	1.40E-04
4	0.26%	13	6.41E-06	12	5.89%	1.45E-04	20	4.28%	214	1.05E-04
5	0.50%	25	1.23E-05	13	6.15%	1.52E-04	21	3.25%	163	8.03E-05
6	0.91%	45	2.24E-05	14	6.04%	1.49E-04	22	3.30%	165	8.13E-05
7	3.79%	189	9.34E-05	15	7.01%	1.73E-04	23	2.46%	123	6.07E-05
8	7.77%	388	1.92E-04	16	7.14%	1.76E-04	24	1.86%	93	4.60E-05
Total							5,000			

[illegible]

Road PM2.5 Fugitive Emissions	
Daily Emissions (g/day)* =	61.1
Road Length (mi) =	0.4
Emissions per Vehicle (g/VMT) =	0.0153
Modeled Emission Rate (g/s) =	7.07E-04

[illegible]

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.15%	57	6.99E-05	9	7.11%	4.33E-04	17	7.39%	369	4.49E-04
2	0.42%	21	2.56E-05	10	4.39%	2.67E-04	18	8.18%	409	4.97E-04
3	0.41%	20	2.48E-05	11	4.66%	2.84E-04	19	5.69%	285	3.46E-04
4	0.26%	13	1.58E-05	12	5.89%	3.58E-04	20	4.28%	214	2.60E-04
5	0.50%	25	3.02E-05	13	6.15%	3.74E-04	21	3.25%	163	1.98E-04
6	0.91%	45	5.52E-05	14	6.04%	3.67E-04	22	3.30%	165	2.00E-04
7	3.79%	189	2.30E-04	15	7.01%	4.26E-04	23	2.46%	123	1.50E-04
8	7.77%	388	4.72E-04	16	7.14%	4.34E-04	24	1.86%	93	1.13E-04
Total							5,000			

[illegible]

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	Average Speed (mph)	Average VPH Diesel Vehicles				
									Average Vehicles per Day	Diesel Vehicles/ Day	Non-Truck	MDT	HDT
Prop-NB Charcot-South	Northbound Charcot Ave*	NW	1	461	31	9.4	3.4	25	6,600	395.3	87	71	237
Prop-SB Charcot-South	Southbound Charcot Ave*	SE	1	461	31	9.4	3.4	25	6,600	395.3	87	71	237
								Total	13,200	791	175	141	475
* Road segments south of Silk Wood Lane.										Fraction of Total Vehicles =	0.946	0.016	0.038
										Fraction Diesel in category =	0.014	0.669	0.946

DPM Emissions	
Daily Emissions (g/day)* =	3.3
Total Road Length (mi) =	0.4
Emissions per Diesel Vehicle (g/VMT) =	0.0104
Modeled Emission Rate (g/s) =	3.82E-05

2040 Hourly Diesel Traffic Volumes and DPM Emissions - Prop-NB Charcot-South

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	g/s	Hour	% Per Hour	VPH	g/s
1	4.12%	16	1.35E-05	9	6.54%	2.15E-05	17	5.65%	22	1.85E-05
2	2.80%	11	9.18E-06	10	7.60%	2.50E-05	18	3.11%	12	1.02E-05
3	2.85%	11	9.36E-06	11	6.39%	2.10E-05	19	2.11%	8	6.93E-06
4	3.11%	12	1.02E-05	12	7.07%	2.32E-05	20	0.84%	3	2.77E-06
5	2.06%	8	6.76E-06	13	6.33%	2.08E-05	21	3.06%	12	1.00E-05
6	3.22%	13	1.06E-05	14	6.17%	2.03E-05	22	4.27%	17	1.40E-05
7	5.96%	24	1.96E-05	15	5.22%	1.72E-05	23	2.69%	11	8.84E-06
8	4.22%	17	1.39E-05	16	3.75%	1.23E-05	24	0.84%	3	2.77E-06
							Total		395	

2040 Hourly Diesel Traffic Volumes Per Direction and DPM Emissions - Prop-SB Charcot-South

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	g/s	Hour	% Per Hour	VPH	g/s
1	4.12%	16	1.35E-05	9	6.54%	2.15E-05	17	5.65%	22	1.85E-05
2	2.80%	11	9.18E-06	10	7.60%	2.50E-05	18	3.11%	12	1.02E-05
3	2.85%	11	9.36E-06	11	6.39%	2.10E-05	19	2.11%	8	6.93E-06
4	3.11%	12	1.02E-05	12	7.07%	2.32E-05	20	0.84%	3	2.77E-06
5	2.06%	8	6.76E-06	13	6.33%	2.08E-05	21	3.06%	12	1.00E-05
6	3.22%	13	1.06E-05	14	6.17%	2.03E-05	22	4.27%	17	1.40E-05
7	5.96%	24	1.96E-05	15	5.22%	1.72E-05	23	2.69%	11	8.84E-06
8	4.22%	17	1.39E-05	16	3.75%	1.23E-05	24	0.84%	3	2.77E-06
Total							395			

Operation - Proposed

Year = 2040

North Charcot

[illegible]

* Road segments north of Silk Wood Lane.

Daily Emissions (g/day)* =	115.4
Road Length (mi) =	0.4
Emissions per Vehicle (g/VMT) =	0.0219
Modeled Emission Rate (g/s) =	1.34E-03

* daily emisisions from CT-EMFAC

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	g/s	Hour	% Per Hour	VPH	g/s
1	1.14%	75	5.31E-05	9	7.12%	3.32E-04	17	7.40%	488	3.45E-04
2	0.42%	28	1.96E-05	10	4.38%	2.04E-04	18	8.19%	541	3.81E-04
3	0.40%	26	1.86E-05	11	4.66%	2.17E-04	19	5.71%	377	2.66E-04
4	0.24%	16	1.12E-05	12	5.89%	2.74E-04	20	4.28%	282	1.99E-04
5	0.49%	32	2.28E-05	13	6.16%	2.87E-04	21	3.25%	215	1.51E-04
6	0.89%	59	4.14E-05	14	6.03%	2.81E-04	22	3.30%	218	1.54E-04
7	3.78%	249	1.76E-04	15	7.02%	3.27E-04	23	2.46%	162	1.15E-04
8	7.77%	513	3.62E-04	16	7.15%	3.33E-04	24	1.87%	123	8.71E-05
Total							6,600			

	% Per				% Per			% Per		
Hour	Hour	VPH	g/mile	Hour	Hour	g/mile	Hour	Hour	VPH	g/mile
1	1.14%	75	5.31E-05	9	7.12%	3.32E-04	17	7.40%	488	3.45E-04
2	0.42%	28	1.96E-05	10	4.38%	2.04E-04	18	8.19%	541	3.81E-04
3	0.40%	26	1.86E-05	11	4.66%	2.17E-04	19	5.71%	377	2.66E-04
4	0.24%	16	1.12E-05	12	5.89%	2.74E-04	20	4.28%	282	1.99E-04
5	0.49%	32	2.28E-05	13	6.16%	2.87E-04	21	3.25%	215	1.51E-04
6	0.89%	59	4.14E-05	14	6.03%	2.81E-04	22	3.30%	218	1.54E-04
7	3.78%	249	1.76E-04	15	7.02%	3.27E-04	23	2.46%	162	1.15E-04
8	7.77%	513	3.62E-04	16	7.15%	3.33E-04	24	1.87%	123	8.71E-05
Total							6,600			

[illegible]

PM2.5 Emissions	
Daily Emissions (g/day)* =	115.4
Road Length (mi) =	0.4
Emissions per Vehicle (g/VMT) =	0.0219
Modeled Emission Rate (g/s) =	1.34E-03

[illegible][illegible]

Operation - Proposed

Year = 2040

North Charcot

[illegible]

* Road segments north of Silk Wood Lane.

Daily Emissions (g/day)* =	258.2
Road Length (mi) =	0.4
Emissions per Vehicle (g/VMT) =	0.0520
Modeled Emission Rate (g/s) =	2.99E-03

* daily emisissions from CT-EMFAC

2040 Hourly Traffic Volumes and TOG Exhaust Emissions - Prop-NB Charcot-North

[illegible]

2040 Hourly Traffic Volumes Per Direction and TOG Exhaust Emissions - Prop-SB Charcot-North

[illegible]

[illegible]

TOG Exhaust Emissions	
Daily Emissions (g/day)* =	258.2
Road Length (mi) =	0.4
Emissions per Vehicle (g/VMT) =	0.0520
Modeled Emission Rate (g/s) =	2.99E-03

	% Per				% Per			% Per		
Hour	Hour	VPH	g/s	Hour	Hour	g/s	Hour	Hour	VPH	g/s
1	1.14%	71	2.93E-04	9	7.12%	1.83E-03	17	7.40%	459	1.90E-03
2	0.42%	26	1.08E-04	10	4.38%	1.13E-03	18	8.19%	508	2.10E-03
3	0.40%	25	1.03E-04	11	4.66%	1.20E-03	19	5.71%	354	1.47E-03
4	0.24%	15	6.17E-05	12	5.89%	1.51E-03	20	4.28%	266	1.10E-03
5	0.49%	30	1.26E-04	13	6.16%	1.58E-03	21	3.25%	202	8.35E-04
6	0.89%	55	2.29E-04	14	6.03%	1.55E-03	22	3.30%	205	8.48E-04
7	3.78%	235	9.71E-04	15	7.02%	1.80E-03	23	2.46%	153	6.32E-04
8	7.77%	482	2.00E-03	16	7.15%	1.84E-03	24	1.87%	116	4.80E-04
							Total	6,205		

[illegible]

Operation - Proposed

Year = 2040

North Charcot

[illegible]

* Road segments north of Silk Wood Lane.

Daily Emissions (g/day)* = 204.6

Road Length (mi) = 0.4

per Vehicle (g/VMT) = 0.041

Emissions per Vehicle (g/VMT) = 0.0412

Modeled Emission Rate (g/s) = 2.37E-03

* daily emisissions from CT-EMFAC

[illegible][illegible]

[illegible]

TOG Evaporative Emissions	
Daily Emissions (g/day)* =	204.6
Road Length (mi) =	0.4
Emissions per Vehicle (g/VMT) =	0.0412
Modeled Emission Rate (g/s) =	2.37E-03

[illegible][illegible]

Operation - Proposed

Year = 2040

North Charcot

[illegible]

* Road segments north of Silk Wood Lane.

Daily Emissions (g/day)* = 80.7

Road Length (mi) = 0.4

per Vehicle (g/VMT) = 0.015

$$\text{Emissions per Vehicle (g/VMT)} = 0.0153$$

Modeled Emission Rate (g/s) = 9.34E-04

* daily emisisions from CT-EMFAC

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	g/s	Hour	% Per Hour	VPH	g/s
1	1.14%	75	3.71E-05	9	7.12%	2.32E-04	17	7.40%	488	2.41E-04
2	0.42%	28	1.37E-05	10	4.38%	1.43E-04	18	8.19%	541	2.67E-04
3	0.40%	26	1.30E-05	11	4.66%	1.52E-04	19	5.71%	377	1.86E-04
4	0.24%	16	7.81E-06	12	5.89%	1.92E-04	20	4.28%	282	1.39E-04
5	0.49%	32	1.59E-05	13	6.16%	2.01E-04	21	3.25%	215	1.06E-04
6	0.89%	59	2.90E-05	14	6.03%	1.96E-04	22	3.30%	218	1.07E-04
7	3.78%	249	1.23E-04	15	7.02%	2.29E-04	23	2.46%	162	8.01E-05
8	7.77%	513	2.53E-04	16	7.15%	2.33E-04	24	1.87%	123	6.09E-05
Total							6,600			

[illegible]

[illegible]

<u>Road PM2.5 Fugitive Emissions</u>	
Daily Emissions (g/day)* =	80.7
Road Length (mi) =	0.4
Emissions per Vehicle (g/VMT) =	0.0153
Modeled Emission Rate (g/s) =	9.34E-04

2040 Hourly Traffic Volumes and Fugitive PM_{2.5} Emissions - Prop-NB Charcot-South

2040 Hourly Traffic Volumes Per Direction and Fugitive PM2.5 Emissions - Prop-SB Charcot-South

	% Per				% Per		% Per			
Hour	Hour	VPH	g/mile	Hour	Hour	g/mile	Hour	Hour	VPH	g/mile
1	1.14%	75	9.15E-05	9	7.12%	5.72E-04	17	7.40%	488	5.94E-04
2	0.42%	28	3.37E-05	10	4.38%	3.52E-04	18	8.19%	541	6.57E-04
3	0.40%	26	3.21E-05	11	4.66%	3.74E-04	19	5.71%	377	4.58E-04
4	0.24%	16	1.93E-05	12	5.89%	4.73E-04	20	4.28%	282	3.44E-04
5	0.49%	32	3.93E-05	13	6.16%	4.94E-04	21	3.25%	215	2.61E-04
6	0.89%	59	7.14E-05	14	6.03%	4.84E-04	22	3.30%	218	2.65E-04
7	3.78%	249	3.03E-04	15	7.02%	5.64E-04	23	2.46%	162	1.97E-04
8	7.77%	513	6.24E-04	16	7.15%	5.74E-04	24	1.87%	123	1.50E-04
Total							6,600			

**Proposed - New Charcot Ave Traffic - TACs & PM2.5
AERMOD Risk Modeling Parameters and Maximum Concentrations
Residential Receptors (1.5 meter receptor heights)**

Emissions Years 2020, 2025, and 2040

Receptor Information

Number of Receptors 118
Receptor Height = 1.5 meters above ground level
Receptor distances = at residential locations

Meteorological Conditions

118

BAAQMD San Jose Airport Met Data 2006-2010
Land Use Classification urban
Wind speed = variable
Wind direction = variable

MEI Maximum Concentrations

Emission Years	Concentration ($\mu\text{g}/\text{m}^3$)		
	DPM	Exhaust TOG	Evaporative TOG
2020	0.00636	0.2358	0.1946
2025	0.00390	0.2245	0.1932
2040	0.00285	0.2383	0.1889

Emission Years	PM2.5 Concentrations ($\mu\text{g}/\text{m}^3$)		
	Total PM2.5	Road Dust PM2.5	Vehicle PM2.5
2020	0.1187	0.0449	0.0738
2025	0.1442	0.0564	0.0878
2040	0.1812	0.0744	0.1068

Charcot Ave, San Jose, CA - Proposed - New Charcot Ave Traffic Maximum Cancer Risks
Residential Receptors (1.5 meter receptor heights)
30-Year Residential Exposure

Cancer Risk Calculation Method

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor (mg/kg-day)⁻¹

ASF = Age sensitivity factor for specified age group

ED = Exposure duration (years)

AT = Averaging time for lifetime cancer risk (years)

FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10⁻⁶

Where: C_{air} = concentration in air (µg/m³)

DBR = daily breathing rate (L/kg body weight-day)

A = Inhalation absorption factor

EF = Exposure frequency (days/year)

10⁻⁶ = Conversion factor

Values

Cancer Potency Factors (mg/kg-day)⁻¹

TAC	CPF
DPM	1.10E+00
Vehicle TOG Exhaust	6.28E-03
Vehicle TOG Evaporative	3.70E-04

Age --> Parameter	Infant/Child			Adult
	3rd Trimester	0 - <2	2 - <16	16 - 30
ASF	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
ED =	0.25	2	14	14
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates

Road Traffic Cancer Risk by Year - Maximum Impact Receptor Location

Exposure Year	Year	Exposure Duration (years)	Age	Maximum - Exposure Information				Cancer Risk (per million)			
				Age Sensitivity	Annual TAC Conc (ug/m3)			DPM	Exhaust TOG	Evaporative TOG	Total
				Factor	DPM	TOG	TOG				
0	2020	0.25	-0.25 - 0*	10	0.0064	0.2358	0.1946	0.086	0.018	0.001	0.11
1	2020	1	1	10	0.0064	0.2358	0.1946	1.04	0.221	0.011	1.28
2	2021	1	2	10	0.0064	0.2358	0.1946	1.04	0.221	0.011	1.28
3	2022	1	3	3	0.0064	0.2358	0.1946	0.16	0.035	0.002	0.20
4	2023	1	4	3	0.0064	0.2358	0.1946	0.16	0.035	0.002	0.20
5	2024	1	5	3	0.0064	0.2358	0.1946	0.16	0.035	0.002	0.20
6	2025	1	6	3	0.0039	0.2245	0.1932	0.10	0.033	0.002	0.14
7	2026	1	7	3	0.0039	0.2245	0.1932	0.10	0.033	0.002	0.14
8	2027	1	8	3	0.0039	0.2245	0.1932	0.10	0.033	0.002	0.14
9	2028	1	9	3	0.0039	0.2245	0.1932	0.10	0.033	0.002	0.14
10	2029	1	10	3	0.0039	0.2245	0.1932	0.10	0.033	0.002	0.14
11	2030	1	11	3	0.0039	0.2245	0.1932	0.10	0.033	0.002	0.14
12	2031	1	12	3	0.0039	0.2245	0.1932	0.10	0.033	0.002	0.14
13	2032	1	13	3	0.0039	0.2245	0.1932	0.10	0.033	0.002	0.14
14	2033	1	14	3	0.0039	0.2245	0.1932	0.10	0.033	0.002	0.14
15	2034	1	15	3	0.0039	0.2245	0.1932	0.10	0.033	0.002	0.14
16	2035	1	16	3	0.0039	0.2245	0.1932	0.10	0.033	0.002	0.14
17	2036	1	17	1	0.0039	0.2245	0.1932	0.01	0.0037	0.000	0.015
18	2037	1	18	1	0.0039	0.2245	0.1932	0.01	0.004	0.000	0.015
19	2038	1	19	1	0.0039	0.2245	0.1932	0.01	0.004	0.000	0.015
20	2039	1	20	1	0.0039	0.2245	0.1932	0.01	0.004	0.000	0.015
21	2040	1	21	1	0.0029	0.2383	0.1889	0.01	0.004	0.000	0.012
22	2041	1	22	1	0.0029	0.2383	0.1889	0.01	0.004	0.000	0.012
23	2042	1	23	1	0.0029	0.2383	0.1889	0.01	0.004	0.000	0.012
24	2043	1	24	1	0.0029	0.2383	0.1889	0.01	0.004	0.000	0.012
25	2044	1	25	1	0.0029	0.2383	0.1889	0.01	0.004	0.000	0.012
26	2045	1	26	1	0.0029	0.2383	0.1889	0.01	0.004	0.000	0.012
27	2046	1	27	1	0.0029	0.2383	0.1889	0.01	0.004	0.000	0.012
28	2047	1	28	1	0.0029	0.2383	0.1889	0.01	0.004	0.000	0.012
29	2048	1	29	1	0.0029	0.2383	0.1889	0.01	0.004	0.000	0.012
30	2049	1	30	1	0.0029	0.2383	0.1889	0.01	0.004	0.000	0.012
Total Increased Cancer Risk			Total					3.90	0.984	0.049	4.9

* Third trimester of pregnancy

Draft

**Proposed - New Charcot Ave Traffic - TACs & PM2.5
AERMOD Risk Modeling Parameters and Maximum Concentrations
at Construction Residential MEI Receptor (1.5 meter receptor height)**

Emissions Years 2020, 2025, and 2040

Receptor Information

Number of Receptors 1
Receptor Height = 1.5 meters above ground level
Receptor distances = at construction MEI receptor

Meteorological Conditions

BAAQMD San Jose Airport Met Data 2006-2010
Land Use Classification urban
Wind speed = variable
Wind direction = variable

Construction MEI Maximum Concentrations

Emission Years	Concentration ($\mu\text{g}/\text{m}^3$)		
	DPM	Exhaust TOG	Evaporative TOG
2020	0.00591	0.2106	0.1738
2025	0.00361	0.1933	0.1717
2040	0.00263	0.2119	0.1679

Emission Years	PM2.5 Concentrations ($\mu\text{g}/\text{m}^3$)		
	Total PM2.5	Road Dust PM2.5	Vehicle PM2.5
2020	0.1060	0.0401	0.0659
2025	0.1282	0.0502	0.0781
2040	0.1611	0.0662	0.0949

**Charcot Ave, San Jose, CA - Proposed - New Charcot Ave Traffic Maximum Cancer Risks
at Construction Residential MEI Receptor (1.5 meter receptor height)
30-Year Residential Exposure**

Cancer Risk Calculation Method

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor (mg/kg-day)⁻¹

ASF = Age sensitivity factor for specified age group

ED = Exposure duration (years)

AT = Averaging time for lifetime cancer risk (years)

FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10⁻⁶

Where: C_{air} = concentration in air (µg/m³)

DBR = daily breathing rate (L/kg body weight-day)

A = Inhalation absorption factor

EF = Exposure frequency (days/year)

10⁻⁶ = Conversion factor

Values

Cancer Potency Factors (mg/kg-day)⁻¹

TAC	CPF
DPM	1.10E+00
Vehicle TOG Exhaust	6.28E-03
Vehicle TOG Evaporative	3.70E-04

Age --> Parameter	Infant/Child			Adult
	3rd Trimester	0 - <2	2 - <16	16 - 30
ASF	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
ED =	0.25	2	14	14
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates

Road Traffic Cancer Risk by Year - Maximum Impact Receptor Location

Exposure Year	Year	Exposure Duration (years)	Age	Maximum - Exposure Information				Cancer Risk (per million)			
				Age Sensitivity Factor	Annual TAC Conc (ug/m3)			DPM	Exhaust TOG	Evaporative TOG	Total
					DPM	TOG	TOG				
0	2019	0.25	-0.25 - 0*	10	0.0000	0.0000	0.0000	0.000	0.000	0.000	0.00
1	2019	1	1	10	0.0000	0.0000	0.0000	0.00	0.000	0.000	0.00
2	2020	1	2	10	0.0059	0.2106	0.1738	0.97	0.198	0.010	1.18
3	2021	1	3	3	0.0059	0.2106	0.1738	0.15	0.031	0.002	0.19
4	2022	1	4	3	0.0059	0.2106	0.1738	0.15	0.031	0.002	0.19
5	2023	1	5	3	0.0059	0.2106	0.1738	0.15	0.031	0.002	0.19
6	2024	1	6	3	0.0036	0.1933	0.1717	0.09	0.029	0.001	0.12
7	2025	1	7	3	0.0036	0.1933	0.1717	0.09	0.029	0.001	0.12
8	2026	1	8	3	0.0036	0.1933	0.1717	0.09	0.029	0.001	0.12
9	2027	1	9	3	0.0036	0.1933	0.1717	0.09	0.029	0.001	0.12
10	2028	1	10	3	0.0036	0.1933	0.1717	0.09	0.029	0.001	0.12
11	2029	1	11	3	0.0036	0.1933	0.1717	0.09	0.029	0.001	0.12
12	2030	1	12	3	0.0036	0.1933	0.1717	0.09	0.029	0.001	0.12
13	2031	1	13	3	0.0036	0.1933	0.1717	0.09	0.029	0.001	0.12
14	2032	1	14	3	0.0036	0.1933	0.1717	0.09	0.029	0.001	0.12
15	2033	1	15	3	0.0036	0.1933	0.1717	0.09	0.029	0.001	0.12
16	2034	1	16	3	0.0036	0.1933	0.1717	0.09	0.029	0.001	0.12
17	2035	1	17	1	0.0036	0.1933	0.1717	0.01	0.0032	0.000	0.014
18	2036	1	18	1	0.0036	0.1933	0.1717	0.01	0.003	0.000	0.014
19	2037	1	19	1	0.0036	0.1933	0.1717	0.01	0.003	0.000	0.014
20	2038	1	20	1	0.0036	0.1933	0.1717	0.01	0.003	0.000	0.014
21	2039	1	21	1	0.0026	0.2119	0.1679	0.01	0.003	0.000	0.011
22	2040	1	22	1	0.0026	0.2119	0.1679	0.01	0.003	0.000	0.011
23	2041	1	23	1	0.0026	0.2119	0.1679	0.01	0.003	0.000	0.011
24	2042	1	24	1	0.0026	0.2119	0.1679	0.01	0.003	0.000	0.011
25	2043	1	25	1	0.0026	0.2119	0.1679	0.01	0.003	0.000	0.011
26	2044	1	26	1	0.0026	0.2119	0.1679	0.01	0.003	0.000	0.011
27	2045	1	27	1	0.0026	0.2119	0.1679	0.01	0.003	0.000	0.011
28	2046	1	28	1	0.0026	0.2119	0.1679	0.01	0.003	0.000	0.011
29	2047	1	29	1	0.0026	0.2119	0.1679	0.01	0.003	0.000	0.011
30	2048	1	30	1	0.0026	0.2119	0.1679	0.01	0.003	0.000	0.011
Total Increased Cancer Risk			Total					2.57	0.652	0.033	3.3

* Third trimester of pregnancy

Draft

Proposed - New Charcot Ave Traffic - TACs & PM2.5
AERMOD Risk Modeling Parameters and Maximum Concentrations
Orchard Elementary School (K - 8) - Child Exposure (1.0 meter receptor heights)

Emissions Years 2020 and 2025

Receptor Information

Number of Receptors 125
 Receptor Height = 1.0 meters
 Receptor distances = receptors in school and yard areas

Meteorological Conditions

BAAQMD San Jose Airport Met Data 2006-2010
 Land Use Classification urban
 Wind speed = variable
 Wind direction = variable

School MEI Maximum Concentrations

Emission Years	Concentration ($\mu\text{g}/\text{m}^3$)		
	DPM	Exhaust TOG	Evaporative TOG
2020	0.00772	0.4105	0.3386
2025	0.00480	0.3902	0.3367

Emission Years	PM2.5 Concentrations ($\mu\text{g}/\text{m}^3$)		
	Total PM2.5	Road Dust PM2.5	Vehicle PM2.5
2020	0.2066	0.0782	0.12839
2025	0.2514	0.0984	0.15302

**Charcot Ave, San Jose, CA - Proposed - New Charcot Ave Traffic Maximum Cancer Risks
Orchard Elementary School (K - 8) - Child Exposure (1.0 meter receptor heights)
9-Year Child Exposure**

Cancer Risk Calculation Method

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor (mg/kg-day)⁻¹
ASF = Age sensitivity factor for specified age group
ED = Exposure duration (years)
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EFH/24) x (EF/365) x 10⁻⁶

Where: C_{air} = concentration in air (µg/m³)
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
EFH = Daily exposure (hours/day)
10⁻⁶ = Conversion factor

Values

Cancer Potency Factors (mg/kg-day)⁻¹

TAC	CPF
DPM	1.10E+00
Vehicle TOG Exhaust	6.28E-03
Vehicle TOG Evaporative	3.70E-04

Age --> Parameter	Infant/Child			Adult
	3rd Trimester	0 - <2	2 - <16	16 - 30
ASF	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
EFH =	10	10	10	10
ED =	0.25	2	14	14
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates

Road Traffic Cancer Risk by Year - Maximum Impact Receptor Location

Road Traffic Cancer Risk by Year - Maximum Impact per Exposure				Maximum - Exposure Information							
Exposure Year	Year	Exposure Duration (years)	Age	Age Sensitivity Factor	Annual TAC Conc (ug/m3)			Cancer Risk (per million)			
					DPM	Exhaust TOG	Evaporative TOG	DPM	Exhaust TOG	Evaporative TOG	Total
1	2020	1	3	3	0.0077	0.4105	0.3386	0.083	0.025	0.001	0.11
2	2021	1	4	3	0.0077	0.4105	0.3386	0.083	0.025	0.001	0.11
3	2022	1	5	3	0.0077	0.4105	0.3386	0.083	0.025	0.001	0.11
4	2023	1	6	3	0.0077	0.4105	0.3386	0.083	0.025	0.001	0.11
5	2024	1	7	3	0.0077	0.4105	0.3386	0.083	0.025	0.001	0.11
6	2025	1	8	3	0.0048	0.3902	0.3367	0.052	0.024	0.001	0.08
7	2026	1	9	3	0.0048	0.3902	0.3367	0.052	0.024	0.001	0.08
8	2027	1	10	3	0.0048	0.3902	0.3367	0.052	0.024	0.001	0.08
9	2028	1	11	3	0.0048	0.3902	0.3367	0.052	0.024	0.001	0.08
Total Increased Cancer Risk			Total					0.62	0.222	0.019	0.9

**Proposed - New Charcot Ave Traffic - TACs & PM2.5
AERMOD Risk Modeling Parameters and Maximum Concentrations
Orchard Elementary School (K - 8) - Child Exposure (1.0 meter receptor heights)
at Location of Construction MEI for School Child**

Emissions Years 2020 and 2025
Receptor Information
Number of Receptors 125
Receptor Height = 1.0 meters
Receptor distances = receptors in school and yard areas

Meteorological Conditions
BAAQMD San Jose Airport Met Data 2006-2010
Land Use Classification urban
Wind speed = variable
Wind direction = variable

At School Construction Cancer Risk MEI

Emission Years	Concentration ($\mu\text{g}/\text{m}^3$)		
	DPM	Exhaust TOG	Evaporative TOG
2020	0.00475	0.2024	0.1669
2025	0.00290	0.1852	0.1650

At School PM2.5 MEI

Emission Years	PM2.5 Concentrations ($\mu\text{g}/\text{m}^3$)		
	Total PM2.5	Road Dust PM2.5	Vehicle PM2.5
2020	0.1019	0.0386	0.06329
2025	0.1232	0.0482	0.075

**Charcot Ave, San Jose, CA - Proposed - New Charcot Ave Traffic Maximum Cancer Risks
Orchard Elementary School (K - 8) - Child Exposure (1.0 meter receptor heights)
at Location of Construction MEI for School Child
9-Year Child Exposure**

Cancer Risk Calculation Method

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor (mg/kg-day)⁻¹

ASF = Age sensitivity factor for specified age group

ED = Exposure duration (years)

AT = Averaging time for lifetime cancer risk (years)

FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EFH/24) x (EF/365) x 10⁻⁶

Where: C_{air} = concentration in air (µg/m³)

DBR = daily breathing rate (L/kg body weight-day)

A = Inhalation absorption factor

EF = Exposure frequency (days/year)

EFH = Daily exposure (hours/day)

10⁻⁶ = Conversion factor

Values

Cancer Potency Factors (mg/kg-day)⁻¹

TAC	CPF
DPM	1.10E+00
Vehicle TOG Exhaust	6.28E-03
Vehicle TOG Evaporative	3.70E-04

Age --> Parameter	Infant/Child			Adult
	3rd Trimester	0 - <2	2 - <16	16 - 30
ASF	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
EFH =	10	10	10	10
ED =	0.25	2	14	14
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates

Road Traffic Cancer Risk by Year - Maximum Impact Receptor Location

Exposure Year	Year	Exposure Duration (years)	Age	Maximum - Exposure Information				Cancer Risk (per million)			
				Age Sensitivity Factor	Annual TAC Conc (ug/m3)			DPM	Exhaust TOG	Evaporative TOG	Total
					DPM	TOG	TOG				
1	2019	1	3	3	0.0000	0.0000	0.0000	0.000	0.000	0.000	0.00
2	2020	1	4	3	0.0048	0.2024	0.1669	0.051	0.012	0.001	0.06
3	2021	1	5	3	0.0048	0.2024	0.1669	0.051	0.012	0.001	0.06
4	2022	1	6	3	0.0048	0.2024	0.1669	0.051	0.012	0.001	0.06
5	2023	1	7	3	0.0048	0.2024	0.1669	0.051	0.012	0.001	0.06
6	2024	1	8	3	0.0029	0.1852	0.1650	0.031	0.011	0.001	0.04
7	2025	1	9	3	0.0029	0.1852	0.1650	0.031	0.011	0.001	0.04
8	2026	1	10	3	0.0029	0.1852	0.1650	0.031	0.011	0.001	0.04
9	2027	1	11	3	0.0029	0.1852	0.1650	0.031	0.011	0.001	0.04
Total Increased Cancer Risk			Total					0.33	0.095	0.009	0.4

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	Average Speed (mph)	Average VPH Diesel Vehicles				
									Average Vehicles per Day	Diesel Vehicles/ Day	Non-Truck	MDT	HDT
Alt 1-NB Charcot-South	Northbound Charcot Ave*	NW	1	461	31	9.4	3.4	25	4,000	208.3	46	42	121
Alt 1-SB Charcot-South	Southbound Charcot Ave*	SE	1	461	31	9.4	3.4	25	4,000	208.3	46	42	121
								Total	8,000	417	91	84	242
* Road segments south of Silk Wood Lane.										Fraction of Total Vehicles =	0.948	0.020	0.032
										Fraction Diesel in category =	0.012	0.523	0.946

* daily emissions from CT-EMFAC

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	g/s	Hour	% Per Hour	VPH	g/s
1	3.93%	8	2.88E-05	9	6.47%	4.75E-05	17	5.49%	11	4.03E-05
2	2.54%	5	1.87E-05	10	7.16%	5.26E-05	18	3.29%	7	2.42E-05
3	2.83%	6	2.08E-05	11	6.35%	4.67E-05	19	2.43%	5	1.78E-05
4	3.41%	7	2.50E-05	12	6.93%	5.09E-05	20	0.98%	2	7.21E-06
5	2.20%	5	1.61E-05	13	6.12%	4.50E-05	21	3.06%	6	2.25E-05
6	3.35%	7	2.46E-05	14	6.12%	4.50E-05	22	4.16%	9	3.05E-05
7	6.07%	13	4.45E-05	15	5.14%	3.78E-05	23	2.37%	5	1.74E-05
8	4.79%	10	3.52E-05	16	3.93%	2.88E-05	24	0.87%	2	6.36E-06
Total							208			

[illegible]

North Charcot

* Road segments north of Silk Wood Lane.

* daily emisisions from CT-EMFAC[illegible][illegible]

[illegible]

PM2.5 Emissions	
Daily Emissions (g/day)* =	80.3
Road Length (mi) =	0.4
Emissions per Vehicle (g/VMT) =	0.0251
Modeled Emission Rate (g/s) =	9.29E-04

	% Per			% Per		% Per				
Hour	Hour	VPH	g/s	Hour	g/s	Hour	Hour	VPH	g/s	
1	1.15%	46	9.22E-05	9	7.11%	5.68E-04	17	7.38%	295	5.90E-04
2	0.42%	17	3.36E-05	10	4.39%	3.51E-04	18	8.17%	327	6.53E-04
3	0.41%	16	3.24E-05	11	4.67%	3.73E-04	19	5.70%	228	4.55E-04
4	0.27%	11	2.16E-05	12	5.89%	4.71E-04	20	4.27%	171	3.41E-04
5	0.50%	20	4.02E-05	13	6.15%	4.92E-04	21	3.26%	130	2.60E-04
6	0.91%	36	7.26E-05	14	6.03%	4.82E-04	22	3.30%	132	2.63E-04
7	3.80%	152	3.03E-04	15	7.01%	5.60E-04	23	2.46%	98	1.96E-04
8	7.76%	311	6.20E-04	16	7.13%	5.70E-04	24	1.87%	75	1.49E-04
Total								4,000		

	% Per				% Per			% Per		
Hour	Hour	VPH	g/mile	Hour	Hour	g/mile	Hour	Hour	VPH	g/mile
1	1.15%	46	9.22E-05	9	7.11%	5.68E-04	17	7.38%	295	5.90E-04
2	0.42%	17	3.36E-05	10	4.39%	3.51E-04	18	8.17%	327	6.53E-04
3	0.41%	16	3.24E-05	11	4.67%	3.73E-04	19	5.70%	228	4.55E-04
4	0.27%	11	2.16E-05	12	5.89%	4.71E-04	20	4.27%	171	3.41E-04
5	0.50%	20	4.02E-05	13	6.15%	4.92E-04	21	3.26%	130	2.60E-04
6	0.91%	36	7.26E-05	14	6.03%	4.82E-04	22	3.30%	132	2.63E-04
7	3.80%	152	3.03E-04	15	7.01%	5.60E-04	23	2.46%	98	1.96E-04
8	7.76%	311	6.20E-04	16	7.13%	5.70E-04	24	1.87%	75	1.49E-04
							Total		4,000	

Operation - Alternative 1

Year = 2020

North Charcot

[illegible]

* Road segments north of Silk Wood Lane.

Daily Emissions (g/day)* =	256.8
Road Length (mi) =	0.4
Emissions per Vehicle (g/VTM) =	0.0845
Modeled Emission Rate (g/s) =	2.97E-03

* daily emissions from CT-EMFAC

[illegible]

Hourly Average Speed - Former F&D Section and Immediate Adjacent Sections - The Valley of the North				Hourly Average Speed - Former F&D Section and Immediate Adjacent Sections - The Valley of the South						
Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.15%	44	1.20E-04	9	7.11%	7.40E-04	17	7.38%	280	7.68E-04
2	0.42%	16	4.37E-05	10	4.39%	4.57E-04	18	8.17%	311	8.51E-04
3	0.41%	15	4.22E-05	11	4.67%	4.86E-04	19	5.70%	216	5.93E-04
4	0.27%	10	2.81E-05	12	5.89%	6.13E-04	20	4.27%	162	4.45E-04
5	0.50%	19	5.23E-05	13	6.15%	6.41E-04	21	3.26%	124	3.39E-04
6	0.91%	35	9.46E-05	14	6.03%	6.28E-04	22	3.30%	125	3.43E-04
7	3.80%	144	3.95E-04	15	7.01%	7.30E-04	23	2.46%	93	2.56E-04
8	7.76%	295	8.08E-04	16	7.13%	7.43E-04	24	1.87%	71	1.94E-04
							Total		3,800	

[illegible]

TOG Exhaust Emissions	
Daily Emissions (g/day)* =	256.8
Road Length (mi) =	0.4
Emissions per Vehicle (g/VMT) =	0.0845
Modeled Emission Rate (g/s) =	2.97E-03

[illegible]

	% Per				% Per			% Per		
Hour	Hour	VPH	g/mile	Hour	Hour	g/mile	Hour	Hour	VPH	g/mile
1	1.15%	44	2.95E-04	9	7.11%	1.82E-03	17	7.38%	280	1.89E-03
2	0.42%	16	1.07E-04	10	4.39%	1.12E-03	18	8.17%	311	2.09E-03
3	0.41%	15	1.04E-04	11	4.67%	1.19E-03	19	5.70%	216	1.46E-03
4	0.27%	10	6.89E-05	12	5.89%	1.50E-03	20	4.27%	162	1.09E-03
5	0.50%	19	1.28E-04	13	6.15%	1.57E-03	21	3.26%	124	8.32E-04
6	0.91%	35	2.32E-04	14	6.03%	1.54E-03	22	3.30%	125	8.43E-04
7	3.80%	144	9.70E-04	15	7.01%	1.79E-03	23	2.46%	93	6.27E-04
8	7.76%	295	1.98E-03	16	7.13%	1.82E-03	24	1.87%	71	4.77E-04
Total								3,800		

Operation - Alternative 1

Year = 2020

North Charcot

[illegible]

* Road segments north of Silk Wood Lane.

Daily Emissions (g/day)* = 212.1

Road Length (mi) = 0.4

per Vehicle (g/VMT) = 0.069

Emissions per Vehicle (g/VMT) = 0.0698

Modeled Emission Rate (g/s) = 2.45E-0

* daily emisissions from CT-EMFAC

2020 Hourly Traffic Volumes and TOG Evaporative Emissions - Alt 1-NB Charcot-North

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	g/s	Hour	% Per Hour	VPH	g/s
1	1.15%	44	9.92E-05	9	7.11%	6.12E-04	17	7.38%	280	6.35E-04
2	0.42%	16	3.61E-05	10	4.39%	3.77E-04	18	8.17%	311	7.03E-04
3	0.41%	15	3.49E-05	11	4.67%	4.01E-04	19	5.70%	216	4.90E-04
4	0.27%	10	2.32E-05	12	5.89%	5.06E-04	20	4.27%	162	3.67E-04
5	0.50%	19	4.32E-05	13	6.15%	5.29E-04	21	3.26%	124	2.80E-04
6	0.91%	35	7.81E-05	14	6.03%	5.19E-04	22	3.30%	125	2.84E-04
7	3.80%	144	3.26E-04	15	7.01%	6.03E-04	23	2.46%	93	2.11E-04
8	7.76%	295	6.68E-04	16	7.13%	6.13E-04	24	1.87%	71	1.60E-04
Total							3,800			

2020 Hourly Traffic Volumes Per Direction and TOG Evaporative Emissions - Alt 1-SB Charcot-North

[illegible]

[illegible]

TOG Evaporative Emissions	
Daily Emissions (g/day)* =	212.1
Road Length (mi) =	0.4
Emissions per Vehicle (g/VMT) =	0.0698
Modeled Emission Rate (g/s) =	2.45E-03

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	g/s	Hour	% Per Hour	VPH	g/s
1	1.15%	44	2.43E-04	9	7.11%	1.50E-03	17	7.38%	280	1.56E-03
2	0.42%	16	8.87E-05	10	4.39%	9.26E-04	18	8.17%	311	1.72E-03
3	0.41%	15	8.56E-05	11	4.67%	9.85E-04	19	5.70%	216	1.20E-03
4	0.27%	10	5.69E-05	12	5.89%	1.24E-03	20	4.27%	162	9.02E-04
5	0.50%	19	1.06E-04	13	6.15%	1.30E-03	21	3.26%	124	6.87E-04
6	0.91%	35	1.92E-04	14	6.03%	1.27E-03	22	3.30%	125	6.96E-04
7	3.80%	144	8.01E-04	15	7.01%	1.48E-03	23	2.46%	93	5.18E-04
8	7.76%	295	1.64E-03	16	7.13%	1.51E-03	24	1.87%	71	3.94E-04
Total							3,800			

	% Per			% Per		% Per				
Hour	Hour	VPH	g/mile	Hour	Hour	g/mile	Hour	Hour	VPH	g/mile
1	1.15%	44	2.43E-04	9	7.11%	1.50E-03	17	7.38%	280	1.56E-03
2	0.42%	16	8.87E-05	10	4.39%	9.26E-04	18	8.17%	311	1.72E-03
3	0.41%	15	8.56E-05	11	4.67%	9.85E-04	19	5.70%	216	1.20E-03
4	0.27%	10	5.69E-05	12	5.89%	1.24E-03	20	4.27%	162	9.02E-04
5	0.50%	19	1.06E-04	13	6.15%	1.30E-03	21	3.26%	124	6.87E-04
6	0.91%	35	1.92E-04	14	6.03%	1.27E-03	22	3.30%	125	6.96E-04
7	3.80%	144	8.01E-04	15	7.01%	1.48E-03	23	2.46%	93	5.18E-04
8	7.76%	295	1.64E-03	16	7.13%	1.51E-03	24	1.87%	71	3.94E-04
Total								3,800		

Operation - Alternative 1

Fugitive Road PM2.5 Modeling - Roadway Links, Traffic Volumes, and Fugitive Road PM2.5 Emissions

Year = 2020

North Charcot

[illegible]

* Road segments north of Silk Wood Lane.

Road PM2.5 Fugitive Emissions

Daily Emissions (g/day)* = 48.9

Road Length (mi) = 0.4

Emissions per Vehicle (g/VMT) = 0.0153

Modeled Emission Rate (g/s) = 5.66E-04

* daily emisisions from CT-EMFAC

2020 Hourly Traffic Volumes and Fugitive PM_{2.5} Emissions - Alt 1-NB Charcot-North

[illegible]

2020 Hourly Traffic Volumes Per Direction and Fugitive PM2.5 Emissions - Alt 1-SB Charcot-North

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.15%	46	2.29E-05	9	7.11%	1.41E-04	17	7.38%	295	1.46E-04
2	0.42%	17	8.33E-06	10	4.39%	8.70E-05	18	8.17%	327	1.62E-04
3	0.41%	16	8.04E-06	11	4.67%	9.25E-05	19	5.70%	228	1.13E-04
4	0.27%	11	5.35E-06	12	5.89%	1.17E-04	20	4.27%	171	8.47E-05
5	0.50%	20	9.96E-06	13	6.15%	1.22E-04	21	3.26%	130	6.46E-05
6	0.91%	36	1.80E-05	14	6.03%	1.20E-04	22	3.30%	132	6.54E-05
7	3.80%	152	7.53E-05	15	7.01%	1.39E-04	23	2.46%	98	4.87E-05
8	7.76%	311	1.54E-04	16	7.13%	1.41E-04	24	1.87%	75	3.70E-05
Total							4,000			

[illegible]

Road PM2.5 Fugitive Emissions	
Daily Emissions (g/day)* =	48.9
Road Length (mi) =	0.4
Emissions per Vehicle (g/VMT) =	0.0153
Modeled Emission Rate (g/s) =	5.66E-04

	% Per			% Per		% Per		% Per		
Hour	Hour	VPH	g/s	Hour	g/s	Hour	g/s	Hour	g/s	
1	1.15%	46	5.61E-05	9	7.11%	3.46E-04	17	7.38%	295	3.59E-04
2	0.42%	17	2.04E-05	10	4.39%	2.14E-04	18	8.17%	327	3.98E-04
3	0.41%	16	1.97E-05	11	4.67%	2.27E-04	19	5.70%	228	2.77E-04
4	0.27%	11	1.31E-05	12	5.89%	2.87E-04	20	4.27%	171	2.08E-04
5	0.50%	20	2.45E-05	13	6.15%	2.99E-04	21	3.26%	130	1.58E-04
6	0.91%	36	4.42E-05	14	6.03%	2.94E-04	22	3.30%	132	1.60E-04
7	3.80%	152	1.85E-04	15	7.01%	3.41E-04	23	2.46%	98	1.19E-04
8	7.76%	311	3.78E-04	16	7.13%	3.47E-04	24	1.87%	75	9.08E-05
Total								4,000		

[illegible]

Operation - Alternative 1

DPM Modeling - Roadway

Year = 2025

North Charcot

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	Average Speed (mph)	Average VPH Diesel Vehicles				
									Average Vehicles per Day	Diesel Vehicles/Day	Non-Truck	MDT	HDT
Alt 1-NB Charcot-North	Northbound Charcot Ave*	NW	2	188	42	12.7	3.4	25	5,000	280.1	62	53	165
Alt 1-SB Charcot-North	Southbound Charcot Ave*	SE	1	188	31	9.4	3.4	25	5,000	280.1	62	53	165
Total									10,000	560	123	106	331
* Road segments north of Silk Wood Lane.									Fraction of Total Vehicles =		0.947	0.018	0.035
									Fraction Diesel in category =		0.013	0.591	0.945

* Road segments north of Silk Wood Lane.

Fraction of Total Vehicles =	0.947	0.018	0.035
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Fraction Diesel in category =	0.013	0.591	0.945
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DPM Emissions

Daily Emissions (g/day)* = 4.5

Total Road Length (mi) = 0.4

Emissions per Diesel Vehicle (g/VMT) = 0.020

Modeled Emission Rate (g/s) = 5.21E-05

* daily emisissions from CT-EMFAC

2025 Hourly Diesel Traffic Volumes and DPM Emissions - Alt 1-NB Charcot-North

[illegible]

2025 Hourly Diesel Traffic Volumes Per Direction and DPM Emissions - Alt 1-SB Charcot-North

[illegible]

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	Average Speed (mph)	Average VPH Diesel Vehicles				
									Average Vehicles per Day	Diesel Vehicles/Day	Non-Truck	MDT	HDT
Alt 1-NB Charcot-South	Northbound Charcot Ave*	NW	1	461	31	9.4	3.4	25	5,000	280.1	62	53	165
Alt 1-SB Charcot-South	Southbound Charcot Ave*	SE	1	461	31	9.4	3.4	25	5,000	280.1	62	53	165
								Total	10,000	560	123	106	331
* Road segments south of Silk Wood Lane.										Fraction of Total Vehicles = 0.947 Fraction Diesel in category = 0.013			

* daily emissions from CT-EMFAC[illegible][illegible]

Operation - Alternative 1

Year = 2025

[illegible]

PM2.5 Emissions	
Daily Emissions (g/day)* =	95.2
Road Length (mi) =	0.4
Emissions per Vehicle (g/VMT) =	0.0238
Modeled Emission Rate (g/s) =	1.10E-03

2025 Hourly Traffic Volumes and PM2.5 Emissions - Alt 1-NB Charcot-North

2025 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - Alt 1-SB Charcot-North

[illegible]

[illegible]

PM2.5 Emissions	
Daily Emissions (g/day)* =	95.2
Road Length (mi) =	0.4
Emissions per Vehicle (g/VMT) =	0.0238
Modeled Emission Rate (g/s) =	1.10E-03

[illegible]

	% Per			% Per			% Per			
Hour	Hour	VPH	g/mile	Hour	Hour	g/mile	Hour	Hour	VPH	g/mile
1	1.15%	57	1.09E-04	9	7.11%	6.74E-04	17	7.39%	369	7.00E-04
2	0.42%	21	3.99E-05	10	4.39%	4.16E-04	18	8.18%	409	7.74E-04
3	0.41%	20	3.87E-05	11	4.66%	4.42E-04	19	5.69%	285	5.39E-04
4	0.26%	13	2.46E-05	12	5.89%	5.58E-04	20	4.28%	214	4.05E-04
5	0.50%	25	4.71E-05	13	6.15%	5.83E-04	21	3.25%	163	3.08E-04
6	0.91%	45	8.59E-05	14	6.04%	5.72E-04	22	3.30%	165	3.12E-04
7	3.79%	189	3.59E-04	15	7.01%	6.64E-04	23	2.46%	123	2.33E-04
8	7.77%	388	7.36E-04	16	7.14%	6.76E-04	24	1.86%	93	1.77E-04
Total								5,000		

Operation - Alternative 1

Year = 2025

North Charcot

[illegible]

* Road segments north of Silk Wood Lane.

Daily Emissions (g/day)* =	233.5
Road Length (mi) =	0.4
Emissions per Vehicle (g/VMT) =	0.0618
Modeled Emission Rate (g/s) =	2.70E-03

* daily emisissions from CT-EMFAC

	% Per				% Per			% Per		
Hour	Hour	VPH	g/s	Hour	Hour	g/s	Hour	Hour	VPH	g/s
1	1.15%	54	1.09E-04	9	7.11%	6.73E-04	17	7.39%	349	6.99E-04
2	0.42%	20	3.99E-05	10	4.39%	4.15E-04	18	8.18%	386	7.74E-04
3	0.41%	19	3.86E-05	11	4.66%	4.41E-04	19	5.69%	269	5.39E-04
4	0.26%	12	2.46E-05	12	5.89%	5.57E-04	20	4.28%	202	4.05E-04
5	0.50%	23	4.70E-05	13	6.15%	5.82E-04	21	3.25%	154	3.08E-04
6	0.91%	43	8.59E-05	14	6.04%	5.72E-04	22	3.30%	156	3.12E-04
7	3.79%	179	3.59E-04	15	7.01%	6.64E-04	23	2.46%	116	2.33E-04
8	7.77%	367	7.35E-04	16	7.14%	6.76E-04	24	1.86%	88	1.76E-04
Total									4,720	

[illegible]

[illegible]

TOG Exhaust Emissions	
Daily Emissions (g/day)* =	233.5
Road Length (mi) =	0.4
Emissions per Vehicle (g/VMT) =	0.0618
Modeled Emission Rate (g/s) =	2.70E-03

2025 Hourly Traffic Volumes and TOG Emissions - Alt 1-NB Charcot-South

[illegible]

2025 Hourly Traffic Volumes Per Direction and TOG Emissions - Alt 1-SB Charcot-South

[illegible]

Operation - Alternative 1

Year = 2025

North Charcot

[illegible]

* Road segments north of Silk Wood Lane.

Daily Emissions (g/day)* = 209.1

Road Length (mi) = 0.4

per Vehicle (g/VMT) = 0.055

Emissions per Vehicle (g/VMT) = 0.0554

Modeled Emission Rate (g/s) = 2.42E-03

* daily emisisions from CT-EMFAC

	% Per			% Per		% Per				
Hour	Hour	VPH	g/s	Hour	Hour	Hour	Hour	VPH	g/s	
1	1.15%	54	9.75E-05	9	7.11%	6.03E-04	17	7.39%	349	6.26E-04
2	0.42%	20	3.58E-05	10	4.39%	3.72E-04	18	8.18%	386	6.93E-04
3	0.41%	19	3.46E-05	11	4.66%	3.95E-04	19	5.69%	269	4.83E-04
4	0.26%	12	2.20E-05	12	5.89%	4.99E-04	20	4.28%	202	3.62E-04
5	0.50%	23	4.21E-05	13	6.15%	5.21E-04	21	3.25%	154	2.76E-04
6	0.91%	43	7.69E-05	14	6.04%	5.12E-04	22	3.30%	156	2.79E-04
7	3.79%	179	3.21E-04	15	7.01%	5.94E-04	23	2.46%	116	2.09E-04
8	7.77%	367	6.58E-04	16	7.14%	6.05E-04	24	1.86%	88	1.58E-04
Total							4,720			

[illegible]

[illegible]

TOG Evaporative Emissions	
Daily Emissions (g/day)* =	209.1
Road Length (mi) =	0.4
Emissions per Vehicle (g/VMT) =	0.0554
Modeled Emission Rate (g/s) =	2.42E-03

2025 Hourly Traffic Volumes and TOG Evaporative Emissions - Alt 1-NB Charcot-South

[illegible]

2025 Hourly Traffic Volumes Per Direction and TOG Evaporative Emissions - Alt 1-SB Charcot-South

[illegible]

Operation - Alternative 1

Year = 2025

North Charcot

[illegible]

* Road segments north of Silk Wood Lane.

Daily Emissions (g/day)* = 61.1

Road Length (mi) = 0.4

per Vehicle (g/VMT) = 0.015

Emissions per Vehicle (g/VMT) = 0.0153

Modeled Emission Rate (g/s) = 7.07E-04

* daily emisissions from CT-EMFAC

2025 Hourly Traffic Volumes and Fugitive PM2.5 Emissions - Alt 1-NB Charcot-North

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	g/s	Hour	% Per Hour	VPH	g/s
1	1.15%	57	2.85E-05	9	7.11%	1.76E-04	17	7.39%	369	1.83E-04
2	0.42%	21	1.04E-05	10	4.39%	1.09E-04	18	8.18%	409	2.03E-04
3	0.41%	20	1.01E-05	11	4.66%	1.16E-04	19	5.69%	285	1.41E-04
4	0.26%	13	6.44E-06	12	5.89%	1.46E-04	20	4.28%	214	1.06E-04
5	0.50%	25	1.23E-05	13	6.15%	1.52E-04	21	3.25%	163	8.06E-05
6	0.91%	45	2.25E-05	14	6.04%	1.50E-04	22	3.30%	165	8.17E-05
7	3.79%	189	9.39E-05	15	7.01%	1.74E-04	23	2.46%	123	6.10E-05
8	7.77%	388	1.92E-04	16	7.14%	1.77E-04	24	1.86%	93	4.62E-05
Total							5,000			

2025 Hourly Traffic Volumes Per Direction and Fugitive PM2.5 Emissions - Alt 1-SB Charcot-North

	% Per				% Per			% Per		
Hour	Hour	VPH	g/mile	Hour	Hour	g/mile	Hour	Hour	VPH	g/mile
1	1.15%	57	2.85E-05	9	7.11%	1.76E-04	17	7.39%	369	1.83E-04
2	0.42%	21	1.04E-05	10	4.39%	1.09E-04	18	8.18%	409	2.03E-04
3	0.41%	20	1.01E-05	11	4.66%	1.16E-04	19	5.69%	285	1.41E-04
4	0.26%	13	6.44E-06	12	5.89%	1.46E-04	20	4.28%	214	1.06E-04
5	0.50%	25	1.23E-05	13	6.15%	1.52E-04	21	3.25%	163	8.06E-05
6	0.91%	45	2.25E-05	14	6.04%	1.50E-04	22	3.30%	165	8.17E-05
7	3.79%	189	9.39E-05	15	7.01%	1.74E-04	23	2.46%	123	6.10E-05
8	7.77%	388	1.92E-04	16	7.14%	1.77E-04	24	1.86%	93	4.62E-05
Total								5,000		

[illegible]

Road PM2.5 Fugitive Emissions	
Daily Emissions (g/day)* =	61.1
Road Length (mi) =	0.4
Emissions per Vehicle (g/VMT) =	0.0153
Modeled Emission Rate (g/s) =	7.07E-04

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	g/s	Hour	% Per Hour	VPH	g/s
1	1.15%	57	6.99E-05	9	7.11%	4.33E-04	17	7.39%	369	4.49E-04
2	0.42%	21	2.56E-05	10	4.39%	2.67E-04	18	8.18%	409	4.97E-04
3	0.41%	20	2.48E-05	11	4.66%	2.84E-04	19	5.69%	285	3.46E-04
4	0.26%	13	1.58E-05	12	5.89%	3.58E-04	20	4.28%	214	2.60E-04
5	0.50%	25	3.02E-05	13	6.15%	3.74E-04	21	3.25%	163	1.98E-04
6	0.91%	45	5.52E-05	14	6.04%	3.67E-04	22	3.30%	165	2.00E-04
7	3.79%	189	2.30E-04	15	7.01%	4.26E-04	23	2.46%	123	1.50E-04
8	7.77%	388	4.72E-04	16	7.14%	4.34E-04	24	1.86%	93	1.13E-04
Total							5,000			

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.15%	57	6.99E-05	9	7.11%	4.33E-04	17	7.39%	369	4.49E-04
2	0.42%	21	2.56E-05	10	4.39%	2.67E-04	18	8.18%	409	4.97E-04
3	0.41%	20	2.48E-05	11	4.66%	2.84E-04	19	5.69%	285	3.46E-04
4	0.26%	13	1.58E-05	12	5.89%	3.58E-04	20	4.28%	214	2.60E-04
5	0.50%	25	3.02E-05	13	6.15%	3.74E-04	21	3.25%	163	1.98E-04
6	0.91%	45	5.52E-05	14	6.04%	3.67E-04	22	3.30%	165	2.00E-04
7	3.79%	189	2.30E-04	15	7.01%	4.26E-04	23	2.46%	123	1.50E-04
8	7.77%	388	4.72E-04	16	7.14%	4.34E-04	24	1.86%	93	1.13E-04
Total							5,000			

Alternative 1 - New Charcot Ave Traffic - TACs & PM2.5
AERMOD Risk Modeling Parameters and Maximum Concentrations
Residential Receptors (1.5 meter receptor heights)

Emissions Years 2020, 2025, and 2040

Receptor Information

Number of Receptors 118
 Receptor Height = 1.5 meters above ground level
 Receptor distances = at residential locations

Meteorological Conditions

BAAQMD San Jose Airport Met Data 2006-2010
 Land Use Classification urban
 Wind speed = variable
 Wind direction = variable

MEI Maximum Concentrations

Emission Years	Concentration ($\mu\text{g}/\text{m}^3$)		
	DPM	Exhaust TOG	Evaporative TOG
2020	0.00643	0.2417	0.1994
2025	0.00392	0.2195	0.1968
2040	0.00286	0.2427	0.1924

Emission Years	PM2.5 Concentrations ($\mu\text{g}/\text{m}^3$)		
	Total PM2.5	Road Dust PM2.5	Vehicle PM2.5
2020	0.1217	0.0461	0.0756
2025	0.1469	0.0575	0.0894
2040	0.1846	0.0758	0.1088

Charcot Ave, San Jose, CA - Alternative 1 - New Charcot Ave Traffic Maximum Cancer Risks
Residential Receptors (1.5 meter receptor heights)
30-Year Residential Exposure

Cancer Risk Calculation Method

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor (mg/kg-day)⁻¹

ASF = Age sensitivity factor for specified age group

ED = Exposure duration (years)

AT = Averaging time for lifetime cancer risk (years)

FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10⁻⁶

Where: C_{air} = concentration in air (µg/m³)

DBR = daily breathing rate (L/kg body weight-day)

A = Inhalation absorption factor

EF = Exposure frequency (days/year)

10⁻⁶ = Conversion factor

Values

Cancer Potency Factors (mg/kg-day)⁻¹

TAC	CPF
DPM	1.10E+00
Vehicle TOG Exhaust	6.28E-03
Vehicle TOG Evaporative	3.70E-04

Age --> Parameter	Infant/Child			Adult
	3rd Trimester	0 - <2	2 - <16	16 - 30
ASF	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
ED =	0.25	2	14	14
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates

Road Traffic Cancer Risk by Year - Maximum Impact Receptor Location

Exposure Year	Year	Exposure Duration (years)	Age	Maximum - Exposure Information				Cancer Risk (per million)			
				Age Sensitivity Factor	Annual TAC Conc (ug/m3)			DPM	Exhaust TOG	Evaporative TOG	Total
					DPM	TOG	TOG				
0	2020	0.25	-0.25 - 0*	10	0.0064	0.2417	0.1994	0.087	0.019	0.001	0.11
1	2020	1	1	10	0.0064	0.2417	0.1994	1.06	0.227	0.011	1.29
2	2021	1	2	10	0.0064	0.2417	0.1994	1.06	0.227	0.011	1.29
3	2022	1	3	3	0.0064	0.2417	0.1994	0.17	0.036	0.002	0.20
4	2023	1	4	3	0.0064	0.2417	0.1994	0.17	0.036	0.002	0.20
5	2024	1	5	3	0.0064	0.2417	0.1994	0.17	0.036	0.002	0.20
6	2025	1	6	3	0.0039	0.2195	0.1968	0.10	0.032	0.002	0.14
7	2026	1	7	3	0.0039	0.2195	0.1968	0.10	0.032	0.002	0.14
8	2027	1	8	3	0.0039	0.2195	0.1968	0.10	0.032	0.002	0.14
9	2028	1	9	3	0.0039	0.2195	0.1968	0.10	0.032	0.002	0.14
10	2029	1	10	3	0.0039	0.2195	0.1968	0.10	0.032	0.002	0.14
11	2030	1	11	3	0.0039	0.2195	0.1968	0.10	0.032	0.002	0.14
12	2031	1	12	3	0.0039	0.2195	0.1968	0.10	0.032	0.002	0.14
13	2032	1	13	3	0.0039	0.2195	0.1968	0.10	0.032	0.002	0.14
14	2033	1	14	3	0.0039	0.2195	0.1968	0.10	0.032	0.002	0.14
15	2034	1	15	3	0.0039	0.2195	0.1968	0.10	0.032	0.002	0.14
16	2035	1	16	3	0.0039	0.2195	0.1968	0.10	0.032	0.002	0.14
17	2036	1	17	1	0.0039	0.2195	0.1968	0.01	0.0036	0.000	0.015
18	2037	1	18	1	0.0039	0.2195	0.1968	0.01	0.004	0.000	0.015
19	2038	1	19	1	0.0039	0.2195	0.1968	0.01	0.004	0.000	0.015
20	2039	1	20	1	0.0039	0.2195	0.1968	0.01	0.004	0.000	0.015
21	2040	1	21	1	0.0029	0.2427	0.1924	0.01	0.004	0.000	0.012
22	2041	1	22	1	0.0029	0.2427	0.1924	0.01	0.004	0.000	0.012
23	2042	1	23	1	0.0029	0.2427	0.1924	0.01	0.004	0.000	0.012
24	2043	1	24	1	0.0029	0.2427	0.1924	0.01	0.004	0.000	0.012
25	2044	1	25	1	0.0029	0.2427	0.1924	0.01	0.004	0.000	0.012
26	2045	1	26	1	0.0029	0.2427	0.1924	0.01	0.004	0.000	0.012
27	2046	1	27	1	0.0029	0.2427	0.1924	0.01	0.004	0.000	0.012
28	2047	1	28	1	0.0029	0.2427	0.1924	0.01	0.004	0.000	0.012
29	2048	1	29	1	0.0029	0.2427	0.1924	0.01	0.004	0.000	0.012
30	2049	1	30	1	0.0029	0.2427	0.1924	0.01	0.004	0.000	0.012
Total Increased Cancer Risk			Total					3.94	0.990	0.050	5.0

* Third trimester of pregnancy

**Alternative 1 - New Charcot Ave Traffic - TACs & PM2.5
AERMOD Risk Modeling Parameters and Maximum Concentrations
at Construction MEI Receptor (1.5 meter receptor height)**

Emissions Years 2020, 2025, and 2040

Receptor Information

Number of Receptors 1
Receptor Height = 1.5 meters above ground level
Receptor distances = at construction MEI receptor

Meteorological Conditions

118

BAAQMD San Jose Airport Met Data 2006-2010
Land Use Classification urban
Wind speed = variable
Wind direction = variable

Construction MEI Maximum Concentrations

Emission Years	Concentration ($\mu\text{g}/\text{m}^3$)		
	DPM	Exhaust TOG	Evaporative TOG
2020	0.00580	0.2082	0.1718
2025	0.00358	0.1891	0.1696
2040	0.00260	0.2092	0.1658

Emission Years	PM2.5 Concentrations ($\mu\text{g}/\text{m}^3$)		
	Total PM2.5	Road Dust PM2.5	Vehicle PM2.5
2020	0.1048	0.0397	0.0651
2025	0.1266	0.0495	0.0771
2040	0.1591	0.0653	0.0937

**Charcot Ave, San Jose, CA - Alternative 1 - New Charcot Ave Traffic Maximum Cancer Risks
at Construction MEI Receptor (1.5 meter receptor height)
30-Year Residential Exposure**

Cancer Risk Calculation Method

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor (mg/kg-day)⁻¹

ASF = Age sensitivity factor for specified age group

ED = Exposure duration (years)

AT = Averaging time for lifetime cancer risk (years)

FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10⁻⁶

Where: C_{air} = concentration in air (µg/m³)

DBR = daily breathing rate (L/kg body weight-day)

A = Inhalation absorption factor

EF = Exposure frequency (days/year)

10⁻⁶ = Conversion factor

Values

Cancer Potency Factors (mg/kg-day)⁻¹

TAC	CPF
DPM	1.10E+00
Vehicle TOG Exhaust	6.28E-03
Vehicle TOG Evaporative	3.70E-04

Age --> Parameter	Infant/Child			Adult
	3rd Trimester	0 - <2	2 - <16	16 - 30
ASF	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
ED =	0.25	2	14	14
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates

Road Traffic Cancer Risk by Year - Maximum Impact Receptor Location

Exposure Year	Year	Exposure Duration (years)	Age	Maximum - Exposure Information				Cancer Risk (per million)			
				Age Sensitivity	Annual TAC Conc (ug/m3)			DPM	Exhaust TOG	Evaporative TOG	Total
				Factor	DPM	TOG	TOG				
0	2019	0.25	-0.25 - 0*	10	0.0000	0.0000	0.0000	0.000	0.000	0.000	0.00
1	2019	1	1	10	0.0000	0.0000	0.0000	0.00	0.000	0.000	0.00
2	2020	1	2	10	0.0058	0.2082	0.1718	0.95	0.195	0.010	1.16
3	2021	1	3	3	0.0058	0.2082	0.1718	0.15	0.031	0.001	0.18
4	2022	1	4	3	0.0058	0.2082	0.1718	0.15	0.031	0.001	0.18
5	2023	1	5	3	0.0058	0.2082	0.1718	0.15	0.031	0.001	0.18
6	2024	1	6	3	0.0036	0.1891	0.1696	0.09	0.028	0.001	0.12
7	2025	1	7	3	0.0036	0.1891	0.1696	0.09	0.028	0.001	0.12
8	2026	1	8	3	0.0036	0.1891	0.1696	0.09	0.028	0.001	0.12
9	2027	1	9	3	0.0036	0.1891	0.1696	0.09	0.028	0.001	0.12
10	2028	1	10	3	0.0036	0.1891	0.1696	0.09	0.028	0.001	0.12
11	2029	1	11	3	0.0036	0.1891	0.1696	0.09	0.028	0.001	0.12
12	2030	1	12	3	0.0036	0.1891	0.1696	0.09	0.028	0.001	0.12
13	2031	1	13	3	0.0036	0.1891	0.1696	0.09	0.028	0.001	0.12
14	2032	1	14	3	0.0036	0.1891	0.1696	0.09	0.028	0.001	0.12
15	2033	1	15	3	0.0036	0.1891	0.1696	0.09	0.028	0.001	0.12
16	2034	1	16	3	0.0036	0.1891	0.1696	0.09	0.028	0.001	0.12
17	2035	1	17	1	0.0036	0.1891	0.1696	0.01	0.0031	0.000	0.014
18	2036	1	18	1	0.0036	0.1891	0.1696	0.01	0.003	0.000	0.014
19	2037	1	19	1	0.0036	0.1891	0.1696	0.01	0.003	0.000	0.014
20	2038	1	20	1	0.0036	0.1891	0.1696	0.01	0.003	0.000	0.014
21	2039	1	21	1	0.0026	0.2092	0.1658	0.01	0.003	0.000	0.011
22	2040	1	22	1	0.0026	0.2092	0.1658	0.01	0.003	0.000	0.011
23	2041	1	23	1	0.0026	0.2092	0.1658	0.01	0.003	0.000	0.011
24	2042	1	24	1	0.0026	0.2092	0.1658	0.01	0.003	0.000	0.011
25	2043	1	25	1	0.0026	0.2092	0.1658	0.01	0.003	0.000	0.011
26	2044	1	26	1	0.0026	0.2092	0.1658	0.01	0.003	0.000	0.011
27	2045	1	27	1	0.0026	0.2092	0.1658	0.01	0.003	0.000	0.011
28	2046	1	28	1	0.0026	0.2092	0.1658	0.01	0.003	0.000	0.011
29	2047	1	29	1	0.0026	0.2092	0.1658	0.01	0.003	0.000	0.011
30	2048	1	30	1	0.0026	0.2092	0.1658	0.01	0.003	0.000	0.011
Total Increased Cancer Risk			Total					2.54	0.641	0.032	3.2

* Third trimester of pregnancy

Alternative 1 - New Charcot Ave Traffic - TACs & PM2.5
AERMOD Risk Modeling Parameters and Maximum Concentrations
Orchard Elementary School (K - 8) - Child Exposure (1.0 meter receptor heights)

Emissions Years 2020 and 2025

Receptor Information

Number of Receptors 125

Receptor Height = 1.0 meters

Receptor distances = receptors in school and yard areas

Meteorological Conditions

BAAQMD San Jose Airport Met Data 2006-2010

Land Use Classification urban

Wind speed = variable

Wind direction = variable

School MEI Maximum Concentrations

Emission Years	Concentration ($\mu\text{g}/\text{m}^3$)		
	DPM	Exhaust TOG	Evaporative TOG
2020	0.00710	0.3711	0.3061
2025	0.00440	0.3371	0.3021
Emission Years	PM2.5 Concentrations ($\mu\text{g}/\text{m}^3$)		
	Total PM2.5	Road Dust PM2.5	Vehicle PM2.5
2020	0.1868	0.0707	0.11607
2025	0.2256	0.0883	0.13732

**Charcot Ave, San Jose, CA - Alternative 1 - New Charcot Ave Traffic Maximum Cancer Risks
Orchard Elementary School (K - 8) - Child Exposure (1.0 meter receptor heights)
9-Year Child Exposure**

Cancer Risk Calculation Method

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor (mg/kg-day)⁻¹

ASF = Age sensitivity factor for specified age group

ED = Exposure duration (years)

AT = Averaging time for lifetime cancer risk (years)

FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EFH/24) x (EF/365) x 10⁻⁶

Where: C_{air} = concentration in air (µg/m³)

DBR = daily breathing rate (L/kg body weight-day)

A = Inhalation absorption factor

EF = Exposure frequency (days/year)

EFH = Daily exposure (hours/day)

10⁻⁶ = Conversion factor

Values

Cancer Potency Factors (mg/kg-day)⁻¹

TAC	CPF
DPM	1.10E+00
Vehicle TOG Exhaust	6.28E-03
Vehicle TOG Evaporative	3.70E-04

Age --> Parameter	Infant/Child			Adult
	3rd Trimester	0 - <2	2 - <16	16 - 30
ASF	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
EFH =	10	10	10	10
ED =	0.25	2	14	14
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates

Road Traffic Cancer Risk by Year - Maximum Impact Receptor Location

Exposure Year	Year	Exposure Duration (years)	Age	Maximum - Exposure Information				Cancer Risk (per million)			
				Age Sensitivity Factor	Annual TAC Conc (ug/m3)		Evaporative	DPM	Exhaust TOG	Evaporative TOG	Total
					DPM	TOG					
1	2020	1	3	3	0.0071	0.3711	0.3061	0.076	0.023	0.001	0.10
2	2021	1	4	3	0.0071	0.3711	0.3061	0.076	0.023	0.001	0.10
3	2022	1	5	3	0.0071	0.3711	0.3061	0.076	0.023	0.001	0.10
4	2023	1	6	3	0.0071	0.3711	0.3061	0.076	0.023	0.001	0.10
5	2024	1	7	3	0.0071	0.3711	0.3061	0.076	0.023	0.001	0.10
6	2025	1	8	3	0.0044	0.3371	0.3021	0.047	0.021	0.001	0.07
7	2026	1	9	3	0.0044	0.3371	0.3021	0.047	0.021	0.001	0.07
8	2027	1	10	3	0.0044	0.3371	0.3021	0.047	0.021	0.001	0.07
9	2028	1	11	3	0.0044	0.3371	0.3021	0.047	0.021	0.001	0.07
Total Increased Cancer Risk			Total					0.57	0.197	0.017	0.8

Alternative 1 - New Charcot Ave Traffic - TACs & PM2.5

AERMOD Risk Modeling Parameters and Maximum Concentrations

Orchard Elementary School (K - 8) - Child Exposure (1.0 meter receptor heights)

at Location of Construction MEI for School Child

Emissions Years 2020 and 2025

Receptor Information

Number of Receptors 125

Receptor Height = 1.0 meters

Receptor distances = receptors in school and yard areas

Meteorological Conditions

BAAQMD San Jose Airport Met Data 2006-2010

Land Use Classification urban

Wind speed = variable

Wind direction = variable

At School Construction Cancer Risk MEI

Emission Years	Concentration ($\mu\text{g}/\text{m}^3$)		
	DPM	Exhaust TOG	Evaporative TOG
2020	0.00465	0.2009	0.1657
2025	0.00288	0.1826	0.1637

At School PM2.5 MEI

Emission Years	PM2.5 Concentrations ($\mu\text{g}/\text{m}^3$)		
	Total PM2.5	Road Dust PM2.5	Vehicle PM2.5
2020	0.1011	0.0383	0.06284
2025	0.1222	0.0478	0.07439

**Charcot Ave, San Jose, CA - Alternative 1 - New Charcot Ave Traffic Maximum Cancer Risks
Orchard Elementary School (K - 8) - Child Exposure (1.0 meter receptor heights)
at Location of Construction MEI for School Child
9-Year Child Exposure**

Cancer Risk Calculation Method

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor (mg/kg-day)⁻¹

ASF = Age sensitivity factor for specified age group

ED = Exposure duration (years)

AT = Averaging time for lifetime cancer risk (years)

FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EFH/24) x (EF/365) x 10⁻⁶

Where: C_{air} = concentration in air (µg/m³)

DBR = daily breathing rate (L/kg body weight-day)

A = Inhalation absorption factor

EF = Exposure frequency (days/year)

EFH = Daily exposure (hours/day)

10⁻⁶ = Conversion factor

Values

Cancer Potency Factors (mg/kg-day)⁻¹

TAC	CPF
DPM	1.10E+00
Vehicle TOG Exhaust	6.28E-03
Vehicle TOG Evaporative	3.70E-04

Age --> Parameter	Infant/Child			Adult
	3rd Trimester	0 - <2	2 - <16	16 - 30
ASF	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
EFH =	10	10	10	10
ED =	0.25	2	14	14
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates

Road Traffic Cancer Risk by Year - Maximum Impact Receptor Location

Exposure Year	Year	Exposure Duration (years)	Age	Maximum - Exposure Information				Cancer Risk (per million)			
				Age Sensitivity Factor	Annual TAC Conc (ug/m3)			DPM	Exhaust TOG	Evaporative TOG	Total
					DPM	TOG	TOG				
1	2019	1	3	3	0.0000	0.0000	0.0000	0.000	0.000	0.000	0.00
2	2020	1	4	3	0.0047	0.2009	0.1657	0.050	0.012	0.001	0.06
3	2021	1	5	3	0.0047	0.2009	0.1657	0.050	0.012	0.001	0.06
4	2022	1	6	3	0.0047	0.2009	0.1657	0.050	0.012	0.001	0.06
5	2023	1	7	3	0.0047	0.2009	0.1657	0.050	0.012	0.001	0.06
6	2024	1	8	3	0.0029	0.1826	0.1637	0.031	0.011	0.001	0.04
7	2025	1	9	3	0.0029	0.1826	0.1637	0.031	0.011	0.001	0.04
8	2026	1	10	3	0.0029	0.1826	0.1637	0.031	0.011	0.001	0.04
9	2027	1	11	3	0.0029	0.1826	0.1637	0.031	0.011	0.001	0.04
Total Increased Cancer Risk			Total					0.32	0.094	0.009	0.4

Charcot Ave, San Jose, CA
Operation - Alternative 2
DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions
Year = 2020

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	Average Speed (mph)	Average VPH Diesel Vehicles				
									Average Vehicles per Day	Diesel Vehicles/Day	Non-Truck	MDT	HDT
Alt 2-NB Charcot-North	Northbound Charcot Ave*	NW	1	186	31	9.4	3.4	25	4,000	208.3	46	42	121
Alt 2-SB Charcot-North	Southbound Charcot Ave*	SE	2	186	42	12.7	3.4	25	4,000	208.3	46	42	121
								Total	8,000	417	91	84	242
* Road segments north of Silk Wood Lane.									Fraction of Total Vehicles =		0.948	0.020	0.032
									Fraction Diesel in category =		0.012	0.523	0.945

* daily emisisions from CT-EMFAC

	% Per				% Per			% Per		
Hour	Hour	VPH	g/s	Hour	Hour	g/s	Hour	Hour	VPH	g/s
1	3.93%	8	1.16E-05	9	6.47%	1.91E-05	17	5.49%	11	1.62E-05
2	2.54%	5	7.51E-06	10	7.16%	2.12E-05	18	3.29%	7	9.73E-06
3	2.83%	6	8.36E-06	11	6.35%	1.88E-05	19	2.43%	5	7.17E-06
4	3.41%	7	1.01E-05	12	6.93%	2.05E-05	20	0.98%	2	9.00E-06
5	2.20%	5	6.49E-06	13	6.12%	1.81E-05	21	3.06%	6	9.05E-06
6	3.35%	7	9.90E-06	14	6.12%	1.81E-05	22	4.16%	9	1.23E-05
7	6.07%	13	1.79E-05	15	5.14%	1.52E-05	23	2.37%	5	7.00E-06
8	4.79%	10	1.42E-05	16	3.93%	1.16E-05	24	0.87%	2	2.56E-06
Total								208		

Hour	% Per	VPH	g/s	Hour	% Per	g/s	Hour	% Per	VPH	g/s
	Hour				Hour			Hour		
1	3.93%	8	1.16E-05	9	6.47%	1.91E-05	17	5.49%	11	1.62E-05
2	2.54%	5	7.51E-06	10	7.16%	2.12E-05	18	3.29%	7	9.73E-06
3	2.83%	6	8.36E-06	11	6.35%	1.88E-05	19	2.43%	5	7.17E-06
4	3.41%	7	1.01E-05	12	6.93%	2.05E-05	20	0.98%	2	2.90E-06
5	2.20%	5	6.49E-06	13	6.12%	1.81E-05	21	3.06%	6	9.05E-06
6	3.35%	7	9.90E-06	14	6.12%	1.81E-05	22	4.16%	9	1.23E-05
7	6.07%	13	1.79E-05	15	5.14%	1.52E-05	23	2.37%	5	7.00E-06
8	4.79%	10	1.42E-05	16	3.93%	1.16E-05	24	0.87%	2	2.56E-06
Total								208		

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	Average Speed (mph)	Average VPH Diesel Vehicles				
									Average Vehicles per Day	Diesel Vehicles/Day	Non-Truck	MDT	HDT
Alt 2-NB Charcot-South	Northbound Charcot Ave*	NW	1	461	31	9.4	3.4	25	4,000	208.3	46	42	121
Alt 2-SB Charcot-South	Southbound Charcot Ave*	SE	1	461	31	9.4	3.4	25	4,000	208.3	46	42	121
								Total	8,000	417	91	84	242
* Road segments south of Silk Wood Lane.										Fraction of Total Vehicles =			
										Fraction Diesel in category =			

* daily emisisions from CT-EMFAC

[illegible]

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	g/s	Hour	% Per Hour	VPH	g/s
1	3.93%	8	2.88E-05	9	6.47%	4.75E-05	17	5.49%	11	4.03E-05
2	2.54%	5	1.87E-05	10	7.16%	5.26E-05	18	3.29%	7	2.42E-05
3	2.83%	6	2.08E-05	11	6.35%	4.67E-05	19	2.43%	5	1.78E-05
4	3.41%	7	2.50E-05	12	6.93%	5.09E-05	20	0.98%	2	7.21E-06
5	2.20%	5	1.61E-05	13	6.12%	4.50E-05	21	3.06%	6	2.25E-05
6	3.35%	7	2.46E-05	14	6.12%	4.50E-05	22	4.16%	9	3.05E-05
7	6.07%	13	4.45E-05	15	5.14%	3.78E-05	23	2.37%	5	1.74E-05
8	4.79%	10	3.52E-05	16	3.93%	2.88E-05	24	0.87%	2	6.36E-06
Total							208			

Operation - Alternative 2

Year = 2020

North Charcot

[illegible]

* Road segments north of Silk Wood Lane.

Daily Emissions (g/day)* =	80.3
Road Length (mi) =	0.4
Emissions per Vehicle (g/VMT) =	0.0251
Modeled Emission Rate (g/s) =	9.29E-04

* daily emissions from CT-EMFAC

	% Per			% Per		% Per				
Hour	Hour	VPH	g/s	Hour	g/s	Hour	Hour	VPH	g/s	
1	1.15%	46	3.71E-05	9	7.11%	2.29E-04	17	7.38%	295	2.37E-04
2	0.42%	17	1.35E-05	10	4.39%	1.41E-04	18	8.17%	327	2.63E-04
3	0.41%	16	1.30E-05	11	4.67%	1.50E-04	19	5.70%	228	1.83E-04
4	0.27%	11	8.67E-06	12	5.89%	1.89E-04	20	4.27%	171	1.37E-04
5	0.50%	20	1.62E-05	13	6.15%	1.98E-04	21	3.26%	130	1.05E-04
6	0.91%	36	2.92E-05	14	6.03%	1.94E-04	22	3.30%	132	1.06E-04
7	3.80%	152	1.22E-04	15	7.01%	2.25E-04	23	2.46%	98	7.89E-05
8	7.76%	311	2.50E-04	16	7.13%	2.29E-04	24	1.87%	75	6.00E-05
Total								4,000		

[illegible]

[illegible]

PM2.5 Emissions	
Daily Emissions (g/day)* =	80.3
Road Length (mi) =	0.4
Emissions per Vehicle (g/VMT) =	0.0251
Modeled Emission Rate (g/s) =	9.29E-04

2020 Hourly Traffic Volumes and PM2.5 Emissions - Alt 2-NB Charcot-South

Hour	% Per Hour	VPH	Hour	% Per Hour	g/s	Hour	% Per Hour	VPH	g/s	
1	1.15%	46	9.22E-05	9	7.11%	5.68E-04	17	7.38%	295	5.90E-04
2	0.42%	17	3.36E-05	10	4.39%	3.51E-04	18	8.17%	327	6.53E-04
3	0.41%	16	3.24E-05	11	4.67%	3.73E-04	19	5.70%	228	4.55E-04
4	0.27%	11	2.16E-05	12	5.89%	4.71E-04	20	4.27%	171	3.41E-04
5	0.50%	20	4.02E-05	13	6.15%	4.92E-04	21	3.26%	130	2.60E-04
6	0.91%	36	7.26E-05	14	6.03%	4.82E-04	22	3.30%	132	2.63E-04
7	3.80%	152	3.03E-04	15	7.01%	5.60E-04	23	2.46%	98	1.96E-04
8	7.76%	311	6.20E-04	16	7.13%	5.70E-04	24	1.87%	75	1.49E-04
Total							4,000			

[illegible]

Operation - Alternative 2

Year =

2020

North Charcot

[illegible]

* Road segments north of Silk Wood Lane.

TOG Exhaust Emissions

Road Length (mi) = 0.4

Modeled Emission Rate (g/s) = 2.97E-0

Modeled Emission Rate (g/s) = 2.97E-03

* daily emisissions from CT-EMFAC

2020 Hourly Traffic Volumes and TOG Exhaust Emissions - Alt 2-NB Charcot-North

[illegible]

2020 Hourly Traffic Volumes Per Direction and TOG Exhaust Emissions - Alt 2-SB Charcot-North

[illegible]

[illegible]

TOG Exhaust Emissions	
Daily Emissions (g/day)* =	256.8
Road Length (mi) =	0.4
Emissions per Vehicle (g/VMT) =	0.0845
Modeled Emission Rate (g/s) =	2.97E-03

[illegible][illegible]

Operation - Alternative 2

Year = 2020

North Charcot

[illegible]

* Road segments north of Silk Wood Lane.

Daily Emissions (g/day)* = 212.1

Road Length (mi) = 0.4

per Vehicle (g/VMT) = 0.069

Emissions per Vehicle (g/VMT) = 0.0698

Modeled Emission Rate (g/s) = 2.45E-0

* daily emissions from CT-EMFAC

Hour	% Per Hour	VPH	g/s	Hour	% Per Hour	g/s	Hour	% Per Hour	VPH	g/s
1	1.15%	44	9.79E-05	9	7.11%	6.04E-04	17	7.38%	280	6.27E-04
2	0.42%	16	3.57E-05	10	4.39%	3.73E-04	18	8.17%	311	6.94E-04
3	0.41%	15	3.45E-05	11	4.67%	3.96E-04	19	5.70%	216	4.84E-04
4	0.27%	10	2.29E-05	12	5.89%	5.00E-04	20	4.27%	162	3.63E-04
5	0.50%	19	4.27E-05	13	6.15%	5.22E-04	21	3.26%	124	2.76E-04
6	0.91%	35	7.71E-05	14	6.03%	5.12E-04	22	3.30%	125	2.80E-04
7	3.80%	144	3.22E-04	15	7.01%	5.95E-04	23	2.46%	93	2.08E-04
8	7.76%	295	6.59E-04	16	7.13%	6.06E-04	24	1.87%	71	1.58E-04
Total							3,800			

	% Per				% Per			% Per		
Hour	Hour	VPH	g/mile	Hour	Hour	g/mile	Hour	Hour	VPH	g/mile
1	1.15%	44	9.79E-05	9	7.11%	6.04E-04	17	7.38%	280	6.27E-04
2	0.42%	16	3.57E-05	10	4.39%	3.73E-04	18	8.17%	311	6.94E-04
3	0.41%	15	3.45E-05	11	4.67%	3.96E-04	19	5.70%	216	4.84E-04
4	0.27%	10	2.29E-05	12	5.89%	5.00E-04	20	4.27%	162	3.63E-04
5	0.50%	19	4.27E-05	13	6.15%	5.22E-04	21	3.26%	124	2.76E-04
6	0.91%	35	7.71E-05	14	6.03%	5.12E-04	22	3.30%	125	2.80E-04
7	3.80%	144	3.22E-04	15	7.01%	5.95E-04	23	2.46%	93	2.08E-04
8	7.76%	295	6.59E-04	16	7.13%	6.06E-04	24	1.87%	71	1.58E-04
Total							3,800			

[illegible]

TOG Evaporative Emissions	
Daily Emissions (g/day)* =	212.1
Road Length (mi) =	0.4
Emissions per Vehicle (g/VMT) =	0.0698
Modeled Emission Rate (g/s) =	2.45E-03

2020 Hourly Traffic Volumes and TOG Evaporative Emissions - Alt 2-NB Charcot-South

[illegible]

	% Per			% Per		% Per				
Hour	Hour	VPH	g/mile	Hour	Hour	g/mile	Hour	Hour	VPH	g/mile
1	1.15%	44	2.43E-04	9	7.11%	1.50E-03	17	7.38%	280	1.56E-03
2	0.42%	16	8.87E-05	10	4.39%	9.26E-04	18	8.17%	311	1.72E-03
3	0.41%	15	8.56E-05	11	4.67%	9.85E-04	19	5.70%	216	1.20E-03
4	0.27%	10	5.69E-05	12	5.89%	1.24E-03	20	4.27%	162	9.02E-04
5	0.50%	19	1.06E-04	13	6.15%	1.30E-03	21	3.26%	124	6.87E-04
6	0.91%	35	1.92E-04	14	6.03%	1.27E-03	22	3.30%	125	6.96E-04
7	3.80%	144	8.01E-04	15	7.01%	1.48E-03	23	2.46%	93	5.18E-04
8	7.76%	295	1.64E-03	16	7.13%	1.51E-03	24	1.87%	71	3.94E-04
Total								3,800		

Operation - Alternative 2

Year = 2020

North Charcot

[illegible]

* Road segments north of Silk Wood Lane.

Road PM2.5 Fugitive Emissions

Daily Emissions (g/day)* = 48.9

Road Length (mi) = 0.4

Emissions per Vehicle (g/VMT) = 0.0153

Modeled Emission Rate (g/s) = 5.66E-04

* daily emissions from CT-EMFAC

2020 Hourly Traffic Volumes and Fugitive PM_{2.5} Emissions - Alt 2-NB Charcot-North

[illegible]

2020 Hourly Traffic Volumes Per Direction and Fugitive PM2.5 Emissions - Alt 2-SB Charcot-North

	% Per			% Per		% Per				
Hour	Hour	VPH	g/mile	Hour	Hour	g/mile	Hour	Hour	VPH	g/mile
1	1.15%	46	2.26E-05	9	7.11%	1.39E-04	17	7.38%	295	1.44E-04
2	0.42%	17	8.22E-06	10	4.39%	8.59E-05	18	8.17%	327	1.60E-04
3	0.41%	16	7.94E-06	11	4.67%	9.13E-05	19	5.70%	228	1.11E-04
4	0.27%	11	5.28E-06	12	5.89%	1.15E-04	20	4.27%	171	8.36E-05
5	0.50%	20	9.84E-06	13	6.15%	1.20E-04	21	3.26%	130	6.37E-05
6	0.91%	36	1.78E-05	14	6.03%	1.18E-04	22	3.30%	132	6.45E-05
7	3.80%	152	7.43E-05	15	7.01%	1.37E-04	23	2.46%	98	4.81E-05
8	7.76%	311	1.52E-04	16	7.13%	1.40E-04	24	1.87%	75	3.65E-05
Total							4,000			

[illegible]

Road PM2.5 Fugitive Emissions	
Daily Emissions (g/day)* =	48.9
Road Length (mi) =	0.4
Emissions per Vehicle (g/VMT) =	0.0153
Modeled Emission Rate (g/s) =	5.66E-04

2020 Hourly Traffic Volumes and Fugitive PM_{2.5} Emissions - Alt 2-NB Charcot-South

[illegible]

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.15%	46	5.61E-05	9	7.11%	3.46E-04	17	7.38%	295	3.59E-04
2	0.42%	17	2.04E-05	10	4.39%	2.14E-04	18	8.17%	327	3.98E-04
3	0.41%	16	1.97E-05	11	4.67%	2.27E-04	19	5.70%	228	2.77E-04
4	0.27%	11	1.31E-05	12	5.89%	2.87E-04	20	4.27%	171	2.08E-04
5	0.50%	20	2.45E-05	13	6.15%	2.99E-04	21	3.26%	130	1.58E-04
6	0.91%	36	4.42E-05	14	6.03%	2.94E-04	22	3.30%	132	1.60E-04
7	3.80%	152	1.85E-04	15	7.01%	3.41E-04	23	2.46%	98	1.19E-04
8	7.76%	311	3.78E-04	16	7.13%	3.47E-04	24	1.87%	75	9.08E-05
Total							4,000			

Alternative 2 - New Charcot Ave Traffic - TACs & PM2.5
AERMOD Risk Modeling Parameters and Maximum Concentrations
Residential Receptors (1.5 meter receptor heights)

Emissions Years 2020, 2025, and 2040

Receptor Information

Number of Receptors 118
 Receptor Height = 1.5 meters above ground level
 Receptor distances = at residential locations

Meteorological Conditions

BAAQMD San Jose Airport Met Data 2006-2010
 Land Use Classification urban
 Wind speed = variable
 Wind direction = variable

MEI Maximum Concentrations

Emission Years	Concentration ($\mu\text{g}/\text{m}^3$)		
	DPM	Exhaust TOG	Evaporative TOG
2020	0.00630	0.2336	0.1927
2025	0.00410	0.2214	0.1905
2040	0.00300	0.2352	0.1864

Emission Years	PM2.5 Concentrations ($\mu\text{g}/\text{m}^3$)		
	Total PM2.5	Road Dust PM2.5	Vehicle PM2.5
2020	0.1176	0.0445	0.0731
2025	0.1422	0.0557	0.0866
2040	0.1789	0.0735	0.1054

Charcot Ave, San Jose, CA - Alternative 2 - New Charcot Ave Traffic Maximum Cancer Risks
Residential Receptors (1.5 meter receptor heights)
30-Year Residential Exposure

Cancer Risk Calculation Method

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor (mg/kg-day)⁻¹

ASF = Age sensitivity factor for specified age group

ED = Exposure duration (years)

AT = Averaging time for lifetime cancer risk (years)

FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10⁻⁶

Where: C_{air} = concentration in air (µg/m³)

DBR = daily breathing rate (L/kg body weight-day)

A = Inhalation absorption factor

EF = Exposure frequency (days/year)

10⁻⁶ = Conversion factor

Values

Cancer Potency Factors (mg/kg-day)⁻¹

TAC	CPF
DPM	1.10E+00
Vehicle TOG Exhaust	6.28E-03
Vehicle TOG Evaporative	3.70E-04

Age --> Parameter	Infant/Child			Adult
	3rd Trimester	0 - <2	2 - <16	16 - 30
ASF	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
ED =	0.25	2	14	14
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates

Road Traffic Cancer Risk by Year - Maximum Impact Receptor Location

Exposure Year	Year	Exposure Duration (years)	Age	Maximum - Exposure Information				Cancer Risk (per million)			
				Age Sensitivity	Annual TAC Conc (ug/m3)			DPM	Exhaust TOG	Evaporative TOG	Total
				Factor	DPM	TOG	TOG				
0	2020	0.25	-0.25 - 0*	10	0.0063	0.2336	0.1927	0.086	0.018	0.001	0.10
1	2020	1	1	10	0.0063	0.2336	0.1927	1.03	0.219	0.011	1.26
2	2021	1	2	10	0.0063	0.2336	0.1927	1.03	0.219	0.011	1.26
3	2022	1	3	3	0.0063	0.2336	0.1927	0.16	0.034	0.002	0.20
4	2023	1	4	3	0.0063	0.2336	0.1927	0.16	0.034	0.002	0.20
5	2024	1	5	3	0.0063	0.2336	0.1927	0.16	0.034	0.002	0.20
6	2025	1	6	3	0.0041	0.2214	0.1905	0.11	0.033	0.002	0.14
7	2026	1	7	3	0.0041	0.2214	0.1905	0.11	0.033	0.002	0.14
8	2027	1	8	3	0.0041	0.2214	0.1905	0.11	0.033	0.002	0.14
9	2028	1	9	3	0.0041	0.2214	0.1905	0.11	0.033	0.002	0.14
10	2029	1	10	3	0.0041	0.2214	0.1905	0.11	0.033	0.002	0.14
11	2030	1	11	3	0.0041	0.2214	0.1905	0.11	0.033	0.002	0.14
12	2031	1	12	3	0.0041	0.2214	0.1905	0.11	0.033	0.002	0.14
13	2032	1	13	3	0.0041	0.2214	0.1905	0.11	0.033	0.002	0.14
14	2033	1	14	3	0.0041	0.2214	0.1905	0.11	0.033	0.002	0.14
15	2034	1	15	3	0.0041	0.2214	0.1905	0.11	0.033	0.002	0.14
16	2035	1	16	3	0.0041	0.2214	0.1905	0.11	0.033	0.002	0.14
17	2036	1	17	1	0.0041	0.2214	0.1905	0.01	0.0036	0.000	0.016
18	2037	1	18	1	0.0041	0.2214	0.1905	0.01	0.004	0.000	0.016
19	2038	1	19	1	0.0041	0.2214	0.1905	0.01	0.004	0.000	0.016
20	2039	1	20	1	0.0041	0.2214	0.1905	0.01	0.004	0.000	0.016
21	2040	1	21	1	0.0030	0.2352	0.1864	0.01	0.004	0.000	0.013
22	2041	1	22	1	0.0030	0.2352	0.1864	0.01	0.004	0.000	0.013
23	2042	1	23	1	0.0030	0.2352	0.1864	0.01	0.004	0.000	0.013
24	2043	1	24	1	0.0030	0.2352	0.1864	0.01	0.004	0.000	0.013
25	2044	1	25	1	0.0030	0.2352	0.1864	0.01	0.004	0.000	0.013
26	2045	1	26	1	0.0030	0.2352	0.1864	0.01	0.004	0.000	0.013
27	2046	1	27	1	0.0030	0.2352	0.1864	0.01	0.004	0.000	0.013
28	2047	1	28	1	0.0030	0.2352	0.1864	0.01	0.004	0.000	0.013
29	2048	1	29	1	0.0030	0.2352	0.1864	0.01	0.004	0.000	0.013
30	2049	1	30	1	0.0030	0.2352	0.1864	0.01	0.004	0.000	0.013
Total Increased Cancer Risk			Total					3.94	0.973	0.048	5.0

* Third trimester of pregnancy

Alternative 2 - New Charcot Ave Traffic - TACs & PM2.5
AERMOD Risk Modeling Parameters and Maximum Concentrations
at Construction MEI Receptor (1.5 meter receptor height)

Emissions Years 2020, 2025, and 2040

Receptor Information

Number of Receptors 1
 Receptor Height = 1.5 meters above ground level
 Receptor distances = at construction MEI receptor

Meteorological Conditions

BAAQMD San Jose Airport Met Data 2006-2010
 Land Use Classification urban
 Wind speed = variable
 Wind direction = variable

Construction MEI Maximum Concentrations

Emission Years	Concentration ($\mu\text{g}/\text{m}^3$)		
	DPM	Exhaust TOG	Evaporative TOG
2020	0.00589	0.2100	0.1732
2025	0.00362	0.1925	0.1710
2040	0.00264	0.2110	0.1673

Emission Years	PM2.5 Concentrations ($\mu\text{g}/\text{m}^3$)		
	Total PM2.5	Road Dust PM2.5	Vehicle PM2.5
2020	0.1057	0.0400	0.0657
2025	0.1277	0.0500	0.0777
2040	0.1605	0.0659	0.0946

**Charcot Ave, San Jose, CA - Alternative 2 - New Charcot Ave Traffic Maximum Cancer Risks
at Construction MEI Receptor (1.5 meter receptor height)
30-Year Residential Exposure**

Cancer Risk Calculation Method

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor (mg/kg-day)⁻¹

ASF = Age sensitivity factor for specified age group

ED = Exposure duration (years)

AT = Averaging time for lifetime cancer risk (years)

FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10⁻⁶

Where: C_{air} = concentration in air (µg/m³)

DBR = daily breathing rate (L/kg body weight-day)

A = Inhalation absorption factor

EF = Exposure frequency (days/year)

10⁻⁶ = Conversion factor

Values

Cancer Potency Factors (mg/kg-day)⁻¹

TAC	CPF
DPM	1.10E+00
Vehicle TOG Exhaust	6.28E-03
Vehicle TOG Evaporative	3.70E-04

Age --> Parameter	Infant/Child			Adult
	3rd Trimester	0 - <2	2 - <16	16 - 30
ASF	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
ED =	0.25	2	14	14
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates

Road Traffic Cancer Risk by Year - Maximum Impact Receptor Location

Exposure Year	Year	Exposure Duration (years)	Age	Maximum - Exposure Information				Cancer Risk (per million)			
				Age Sensitivity Factor	Annual TAC Conc (ug/m3)			DPM	Exhaust TOG	Evaporative TOG	Total
					DPM	TOG	TOG				
0	2019	0.25	-0.25 - 0*	10	0.0000	0.0000	0.0000	0.000	0.000	0.000	0.00
1	2019	1	1	10	0.0000	0.0000	0.0000	0.00	0.000	0.000	0.00
2	2020	1	2	10	0.0059	0.2100	0.1732	0.97	0.197	0.010	1.17
3	2021	1	3	3	0.0059	0.2100	0.1732	0.15	0.031	0.002	0.18
4	2022	1	4	3	0.0059	0.2100	0.1732	0.15	0.031	0.002	0.18
5	2023	1	5	3	0.0059	0.2100	0.1732	0.15	0.031	0.002	0.18
6	2024	1	6	3	0.0036	0.1925	0.1710	0.09	0.028	0.001	0.12
7	2025	1	7	3	0.0036	0.1925	0.1710	0.09	0.028	0.001	0.12
8	2026	1	8	3	0.0036	0.1925	0.1710	0.09	0.028	0.001	0.12
9	2027	1	9	3	0.0036	0.1925	0.1710	0.09	0.028	0.001	0.12
10	2028	1	10	3	0.0036	0.1925	0.1710	0.09	0.028	0.001	0.12
11	2029	1	11	3	0.0036	0.1925	0.1710	0.09	0.028	0.001	0.12
12	2030	1	12	3	0.0036	0.1925	0.1710	0.09	0.028	0.001	0.12
13	2031	1	13	3	0.0036	0.1925	0.1710	0.09	0.028	0.001	0.12
14	2032	1	14	3	0.0036	0.1925	0.1710	0.09	0.028	0.001	0.12
15	2033	1	15	3	0.0036	0.1925	0.1710	0.09	0.028	0.001	0.12
16	2034	1	16	3	0.0036	0.1925	0.1710	0.09	0.028	0.001	0.12
17	2035	1	17	1	0.0036	0.1925	0.1710	0.01	0.0032	0.000	0.014
18	2036	1	18	1	0.0036	0.1925	0.1710	0.01	0.003	0.000	0.014
19	2037	1	19	1	0.0036	0.1925	0.1710	0.01	0.003	0.000	0.014
20	2038	1	20	1	0.0036	0.1925	0.1710	0.01	0.003	0.000	0.014
21	2039	1	21	1	0.0026	0.2110	0.1673	0.01	0.003	0.000	0.011
22	2040	1	22	1	0.0026	0.2110	0.1673	0.01	0.003	0.000	0.011
23	2041	1	23	1	0.0026	0.2110	0.1673	0.01	0.003	0.000	0.011
24	2042	1	24	1	0.0026	0.2110	0.1673	0.01	0.003	0.000	0.011
25	2043	1	25	1	0.0026	0.2110	0.1673	0.01	0.003	0.000	0.011
26	2044	1	26	1	0.0026	0.2110	0.1673	0.01	0.003	0.000	0.011
27	2045	1	27	1	0.0026	0.2110	0.1673	0.01	0.003	0.000	0.011
28	2046	1	28	1	0.0026	0.2110	0.1673	0.01	0.003	0.000	0.011
29	2047	1	29	1	0.0026	0.2110	0.1673	0.01	0.003	0.000	0.011
30	2048	1	30	1	0.0026	0.2110	0.1673	0.01	0.003	0.000	0.011
Total Increased Cancer Risk			Total					2.57	0.650	0.033	3.3

* Third trimester of pregnancy

Alternative 2 - New Charcot Ave Traffic - TACs & PM2.5**AERMOD Risk Modeling Parameters and Maximum Concentrations****Orchard Elementary School (K - 8) - Child Exposure (1.0 meter receptor heights)**

Emissions Years 2020 and 2025

Receptor Information

Number of Receptors 125

Receptor Height = 1.0 meters

Receptor distances = receptors in school and yard areas

Meteorological Conditions

BAAQMD San Jose Airport Met Data 2006-2010

Land Use Classification urban

Wind speed = variable

Wind direction = variable

School MEI Maximum Concentrations

Emission Years	Concentration ($\mu\text{g}/\text{m}^3$)		
	DPM	Exhaust TOG	Evaporative TOG
2020	0.00743	0.3900	0.3217
2025	0.00517	0.3695	0.3182

Emission Years	PM2.5 Concentrations ($\mu\text{g}/\text{m}^3$)		
	Total PM2.5	Road Dust PM2.5	Vehicle PM2.5
2020	0.1963	0.0743	0.12198
2025	0.2376	0.0930	0.14462

**Charcot Ave, San Jose, CA - Alternative 2 - New Charcot Ave Traffic Maximum Cancer Risks
Orchard Elementary School (K - 8) - Child Exposure (1.0 meter receptor heights)
9-Year Child Exposure**

Cancer Risk Calculation Method

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor (mg/kg-day)⁻¹

ASF = Age sensitivity factor for specified age group

ED = Exposure duration (years)

AT = Averaging time for lifetime cancer risk (years)

FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EFH/24) x (EF/365) x 10⁻⁶

Where: C_{air} = concentration in air (µg/m³)

DBR = daily breathing rate (L/kg body weight-day)

A = Inhalation absorption factor

EF = Exposure frequency (days/year)

EFH = Daily exposure (hours/day)

10⁻⁶ = Conversion factor

Values

Cancer Potency Factors (mg/kg-day)⁻¹

TAC	CPF
DPM	1.10E+00
Vehicle TOG Exhaust	6.28E-03
Vehicle TOG Evaporative	3.70E-04

Age --> Parameter	Infant/Child			Adult
	3rd Trimester	0 - <2	2 - <16	16 - 30
ASF	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
EFH =	10	10	10	10
ED =	0.25	2	14	14
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates

Road Traffic Cancer Risk by Year - Maximum Impact Receptor Location

Road Traffic Cancer Risk by Year - Maximum Impact per Exposure				Maximum - Exposure Information				Cancer Risk (per million)			
Exposure Year	Year	Exposure Duration (years)	Age	Age Sensitivity Factor	Annual TAC Conc (ug/m3)						
					DPM	Exhaust TOG	Evaporative TOG	DPM	Exhaust TOG	Evaporative TOG	Total
1	2020	1	3	3	0.0074	0.3900	0.3217	0.080	0.024	0.001	0.11
2	2021	1	4	3	0.0074	0.3900	0.3217	0.080	0.024	0.001	0.11
3	2022	1	5	3	0.0074	0.3900	0.3217	0.080	0.024	0.001	0.11
4	2023	1	6	3	0.0074	0.3900	0.3217	0.080	0.024	0.001	0.11
5	2024	1	7	3	0.0074	0.3900	0.3217	0.080	0.024	0.001	0.11
6	2025	1	8	3	0.0052	0.3695	0.3182	0.056	0.023	0.001	0.08
7	2026	1	9	3	0.0052	0.3695	0.3182	0.056	0.023	0.001	0.08
8	2027	1	10	3	0.0052	0.3695	0.3182	0.056	0.023	0.001	0.08
9	2028	1	11	3	0.0052	0.3695	0.3182	0.056	0.023	0.001	0.08
Total Increased Cancer Risk			Total					0.62	0.211	0.018	0.9

Alternative 2 - New Charcot Ave Traffic - TACs & PM2.5

AERMOD Risk Modeling Parameters and Maximum Concentrations

**Orchard Elementary School (K - 8) - Child Exposure (1.0 meter receptor height)
at Location of Construction MEI for School Child**

Emissions Years 2020 and 2025

Receptor Information

Number of Receptors 125
Receptor Height = 1.0 meters
Receptor distances = receptors in school and yard areas

Meteorological Conditions

BAAQMD San Jose Airport Met Data 2006-2010
Land Use Classification urban
Wind speed = variable
Wind direction = variable

At School Construction Cancer Risk MEI

Emission Years	Concentration ($\mu\text{g}/\text{m}^3$)		
	DPM	Exhaust TOG	Evaporative TOG
2020	0.00474	0.2019	0.1665
2025	0.00290	0.1846	0.1645

At School PM2.5 MEI

Emission Years	PM2.5 Concentrations ($\mu\text{g}/\text{m}^3$)		
	Total PM2.5	Road Dust PM2.5	Vehicle PM2.5
2020	0.1016	0.0385	0.06314
2025	0.1156	0.0409	0.07476

**Charcot Ave, San Jose, CA - Alternative 2 - New Charcot Ave Traffic Maximum Cancer Risks
Orchard Elementary School (K - 8) - Child Exposure (1.0 meter receptor height)
at Location of Construction MEI for School Child
9-Year Child Exposure**

Cancer Risk Calculation Method

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E6

Where: CPF = Cancer potency factor (mg/kg-day)⁻¹

ASF = Age sensitivity factor for specified age group

ED = Exposure duration (years)

AT = Averaging time for lifetime cancer risk (years)

FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EFH/24) x (EF/365) x 10⁻⁶

Where: C_{air} = concentration in air (µg/m³)

DBR = daily breathing rate (L/kg body weight-day)

A = Inhalation absorption factor

EF = Exposure frequency (days/year)

EFH = Daily exposure (hours/day)

10⁻⁶ = Conversion factor

Values

Cancer Potency Factors (mg/kg-day)⁻¹

TAC	CPF
DPM	1.10E+00
Vehicle TOG Exhaust	6.28E-03
Vehicle TOG Evaporative	3.70E-04

Age --> Parameter	Infant/Child			Adult
	3rd Trimester	0 - <2	2 - <16	16 - 30
ASF	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
EFH =	10	10	10	10
ED =	0.25	2	14	14
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates

Road Traffic Cancer Risk by Year - Maximum Impact Receptor Location

Exposure Year	Year	Exposure Duration (years)	Age	Maximum - Exposure Information				Cancer Risk (per million)			
				Age Sensitivity Factor	Annual TAC Conc (ug/m3)			DPM	Exhaust TOG	Evaporative TOG	Total
					DPM	TOG	TOG				
1	2019	1	3	3	0.0000	0.0000	0.0000	0.000	0.000	0.000	0.00
2	2020	1	4	3	0.0047	0.2019	0.1665	0.051	0.012	0.001	0.06
3	2021	1	5	3	0.0047	0.2019	0.1665	0.051	0.012	0.001	0.06
4	2022	1	6	3	0.0047	0.2019	0.1665	0.051	0.012	0.001	0.06
5	2023	1	7	3	0.0047	0.2019	0.1665	0.051	0.012	0.001	0.06
6	2024	1	8	3	0.0029	0.1846	0.1645	0.031	0.011	0.001	0.04
7	2025	1	9	3	0.0029	0.1846	0.1645	0.031	0.011	0.001	0.04
8	2026	1	10	3	0.0029	0.1846	0.1645	0.031	0.011	0.001	0.04
9	2027	1	11	3	0.0029	0.1846	0.1645	0.031	0.011	0.001	0.04
Total Increased Cancer Risk			Total					0.33	0.095	0.009	0.4

Attachment 6: Screening Community Risk Calculations

Bay Area Air Quality Management District

Roadway Screening Analysis Calculator

County specific tables containing estimates of risk and hazard impacts from roadways in the Bay Area.

INSTRUCTIONS:

Input the site-specific characteristics of your project by using the drop down menu in the "Search Parameter" box. We recommend that this analysis be used for roadways with 10,000 ADT and above.

- County: Select the County where the project is located. The calculator is only applicable for projects within the nine Bay Area counties.
- Roadway Direction: Select the orientation that best matches the roadway. If the roadway orientation is neither clearly north-south nor east-west, use the highest values predicted from either orientation.
- Side of the Roadway: Identify on which side of the roadway the project is located.
- Distance from Roadway: Enter the distance in feet from the nearest edge of the roadway to the project site. The calculator estimates values for distances greater than 10 feet and less than 1000 feet. For distances greater than 1000 feet, the user can choose to extrapolate values using a distribution curve or apply 1000 feet values for greater distances.
- Annual Average Daily Traffic (ADT): Enter the annual average daily traffic on the roadway. These data may be collected from the city or the county (if the area is unincorporated).

When the user has completed the data entries, the screening level PM_{2.5} annual average concentration and the cancer risk results will appear in the Results Box on the right. Please note that the roadway tool is not applicable for California State Highways and the District refers the user to the Highway Screening Analysis Tool at: <http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx>.

Notes and References listed below the Search Boxes

Search Parameters

County	Santa Clara
Roadway Direction	North-South
Side of the Roadway	West
Distance from Roadway	500 feet
Annual Average Daily Traffic (ADT)	35,000

Results

Santa Clara County

NORTH-SOUTH DIRECTIONAL ROADWAY

PM_{2.5} annual average

0.053 (µg/m³)

Cancer Risk

2.70 (per million)

Oakland Rd, Residential

Traffic from 2040 Project Roadway Segment Volumes Difference
Data for Santa Clara County based on meteorological data collected from San Jose Airport in 1997

Adjusted for 2015
OEHHa and EMFAC2014
for 2018

1.85

(per million)

Note that EMFAC2014 predicts DSL PM_{2.5} aggregate rates in 2018 that are 46% of EMFAC2011 for 2014. TOG gasoline rates are 56% of EMFAC2011 year 2014 rates. This is for light- and medium-duty vehicles traveling at 30 mph for Bay Area

Notes and References:

1. Emissions were developed using EMFAC2011 for fleet mix in 2014 assuming 10,000 AADT and includes impacts from diesel and gasoline vehicle exhaust, brake and tire wear, and resuspended dust.
2. Roadways were modeled using CALINE4-Cal3qhc air dispersion model assuming a source length of one kilometer. Meteorological data used to estimate the screening values are noted at the bottom of the "Results" box.
3. Cancer risks were estimated for 70 year lifetime exposure starting in 2014 that includes sensitivity values for early life exposures and OEHHa toxicity values adopted in 2013.

Bay Area Air Quality Management District

Roadway Screening Analysis Calculator

County specific tables containing estimates of risk and hazard impacts from roadways in the Bay Area.

INSTRUCTIONS:

Input the site-specific characteristics of your project by using the drop down menu in the "Search Parameter" box. We recommend that this analysis be used for roadways with 10,000 ADT and above.

- County: Select the County where the project is located. The calculator is only applicable for projects within the nine Bay Area counties.
- Roadway Direction: Select the orientation that best matches the roadway. If the roadway orientation is neither clearly north-south nor east-west, use the highest values predicted from either orientation.
- Side of the Roadway: Identify on which side of the roadway the project is located.
- Distance from Roadway: Enter the distance in feet from the nearest edge of the roadway to the project site. The calculator estimates values for distances greater than 10 feet and less than 1000 feet. For distances greater than 1000 feet, the user can choose to extrapolate values using a distribution curve or apply 1000 feet values for greater distances.
- Annual Average Daily Traffic (ADT): Enter the annual average daily traffic on the roadway. These data may be collected from the city or the county (if the area is unincorporated).

When the user has completed the data entries, the screening level PM_{2.5} annual average concentration and the cancer risk results will appear in the Results Box on the right. Please note that the roadway tool is not applicable for California State Highways and the District refers the user to the Highway Screening Analysis Tool at: <http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx>.

Notes and References listed below the Search Boxes

Search Parameters

County	Santa Clara
Roadway Direction	North-South
Side of the Roadway	West
Distance from Roadway	400 feet
Annual Average Daily Traffic (ADT)	35,000

Results

Santa Clara County

NORTH-SOUTH DIRECTIONAL ROADWAY

PM_{2.5} annual average

0.062 (µg/m³)

Cancer Risk

3.18 (per million)

Oakland Rd, Residential

Traffic from 2040 Project Roadway Segment Volumes Difference
Data for Santa Clara County based on meteorological data collected from San Jose Airport in 1997

Adjusted for 2015
OEHHa and EMFAC2014
for 2018

2.19

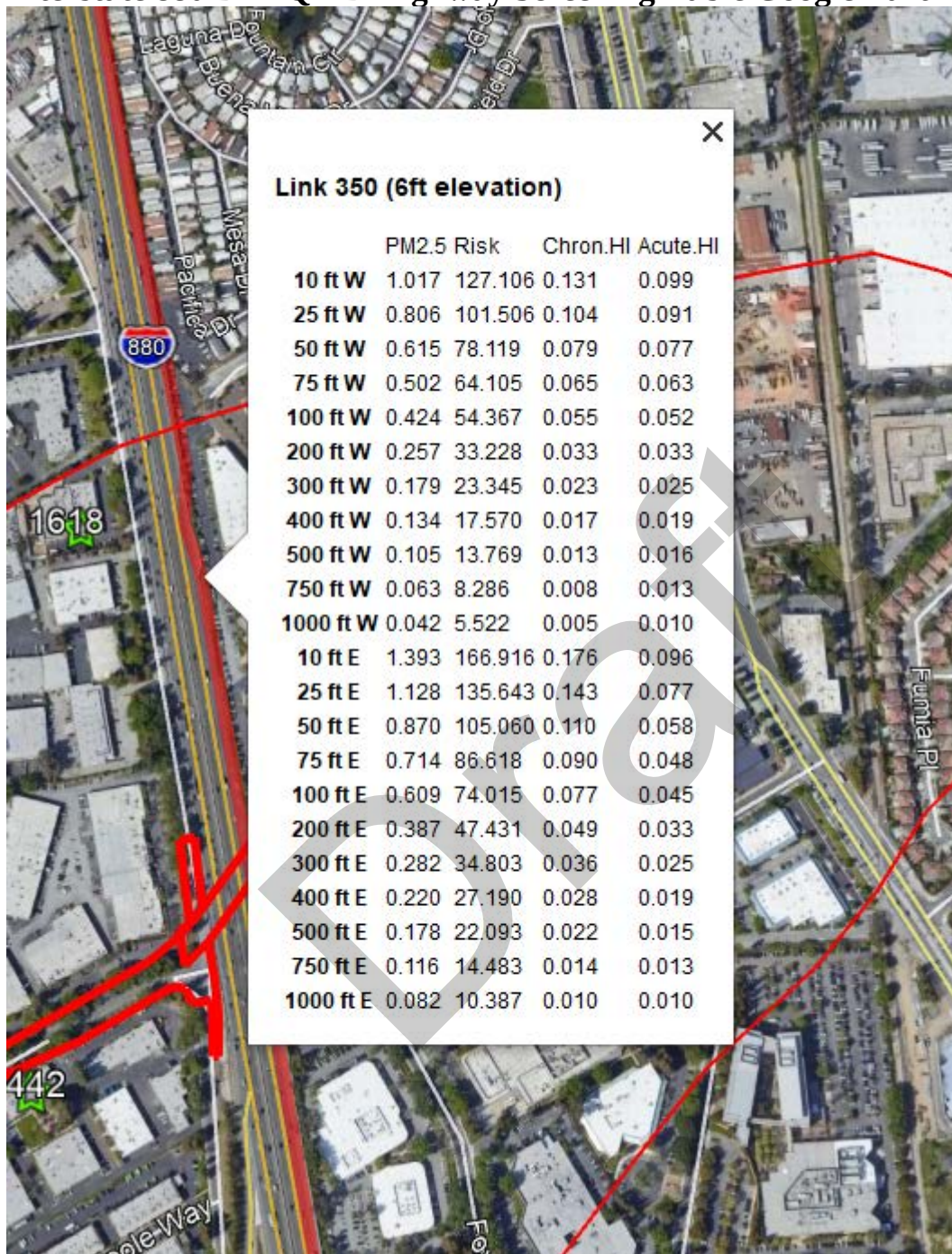
(per million)

Note that EMFAC2014 predicts DSL PM_{2.5} aggregate rates in 2018 that are 46% of EMFAC2011 for 2014. TOG gasoline rates are 56% of EMFAC2011 year 2014 rates. This is for light- and medium-duty vehicles traveling at 30 mph for Bay Area

Notes and References:

1. Emissions were developed using EMFAC2011 for fleet mix in 2014 assuming 10,000 AADT and includes impacts from diesel and gasoline vehicle exhaust, brake and tire wear, and resuspended dust.
2. Roadways were modeled using CALINE4-Cal3qhc air dispersion model assuming a source length of one kilometer. Meteorological data used to estimate the screening values are noted at the bottom of the "Results" box.
3. Cancer risks were estimated for 70 year lifetime exposure starting in 2014 that includes sensitivity values for early life exposures and OEHHa toxicity values adopted in 2013.

Interstate 880 BAAQMD Highway Screening Table Google Earth Tool





BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Risk & Hazard Stationary Source Inquiry Form

This form is required when users request stationary source data from BAAQMD

This form is to be used with the BAAQMD's Google Earth stationary source screening tables.

[Click here for guidance on conducting risk & hazard screening, including roadways & freeways, refer to the District's Risk & Hazard Analysis flow chart.](#)

[Click here for District's Recommended Methods for Screening and Modeling Local Risks and Hazards document.](#)

Table A: Requester Contact Information

Date of Request	1/10/2019
Contact Name	Mimi McNamara
Affiliation	Illingworth & Rodkin, Inc.
Phone	707-794-040 X111
Email	mmcnamara@illingworthrodkin.com
Project Name	Charcot Road Extension
Address	
City	San Jose
County	Santa Clara
Type (residential, commercial, mixed use, industrial, etc.)	Roadway extension
Project Size (# of units or building square feet)	
Comments:	

For Air District assistance, the following steps must be completed:

1. Complete all the contact and project information requested in **Table A**. Incomplete forms will not be processed. Please include a project site map.
2. Download and install the free program Google Earth, <http://www.google.com/earth/download/ge/>, and then download the county specific Google Earth stationary source application files from the District's website, <http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx>. The small points on the map represent stationary sources permitted by the District (Map A on right). These permitted sources include diesel back-up generators, gas stations, dry cleaners, boilers, printers, auto spray booths, etc. Click on a point to view the source's Information Table, including the name, location, and preliminary estimated cancer risk, hazard index, and PM_{2.5} concentration.
3. Find the project site in Google Earth by inputting the site's address in the Google Earth search box.
4. Identify stationary sources within at least a 1000ft radius of project site. Verify that the location of the source on the map matches with the source's address in the information Table, by using the Google Earth address search box to confirm the source's address location. Please report any mapping errors to the District.
5. List the stationary source information in **Table B** section only.
6. Note that a small percentage of the stationary sources have Health Risk Screening Assessment (HRSA) data INSTEAD of screening level data. These sources will be noted by an asterisk next to the Plant Name (Map B on right). If HRSA values are presented, these values have already been modeled and cannot be adjusted further.
7. Email this completed form to District staff. District staff will provide the most recent risk, hazard, and PM_{2.5} data that are available for the source(s). If this information or data are not available, source emissions data will be provided. Staff will respond to inquiries within three weeks.

Note that a public records request received for the same stationary source information will cancel the processing of your SSIF request.

Submit forms, maps, and questions to Areana Flores at 415-749-4616, or aflores@baaqmd.gov

Table B: Google Earth data

Distance from Receptor (feet) or MI ¹	Facility Name	Address	Plant No.	Cancer Risk ²	Hazard Risk ⁴	PM _{2.5} ⁷	Source No. ³	Type of Source ⁴	Fuel Code ⁵	Status/Comments
>1000	Southwest Offset Printing Co, Inc	587 Charcot Avenue	20285		0.0712		S1-53	Surface coating (3)		
>1000	Applied Anodize Inc	622 Charcot Ave, Unit D	6919	58.924	0.0008	0.010119	S1-55	Evaporative Tank (1), Boiler (4)		
>1000	Epiphonics Corp	770 Charcot Avenue	20442		0.0002	0.0001	S1	Solvent Cleaning		
950	Micrus Endovascular, LLC	821 Fox Lane	21487		0.0011					Shutdown
1000	Sanmina Corporation	2101 O'Toole Avenue	1618		0.2043		S2, S18, S19	Ammonia Etcher, Process Tank (2)		
>1000	SFPF, LP	2150 Kruse Drive	4020	100.146	0.5010			Multiple		Emissions file attached

Footnotes:

1. Maximally exposed individual
2. These Cancer Risk, Hazard Index, and PM_{2.5} columns represent the values in the Google Earth Plant Information Table.
3. Each plant may have multiple permits and sources.
4. Permitted sources include diesel back-up generators, gas stations, dry cleaners, boilers, printers, auto spray booths, etc.
5. Fuel codes: 98 = diesel, 189 = Natural Gas.
6. If a Health Risk Screening Assessment (HRSA) was completed for the source, the application number will be listed here.
7. The date that the HRSA was completed.
8. Engineer who completed the HRSA. For District purposes only.
9. All HRSA completed before 1/5/2010 need to be multiplied by an age sensitivity factor of 1.7.
10. The HRSA "Chronic Health" number represents the Hazard Index.
11. Further information about common sources:
 - a. Sources that only include diesel internal combustion engines can be adjusted using the BAAQMD's Diesel Multiplier worksheet.
 - b. The risk from natural gas boilers used for space heating when <25 MM BTU/hr would have an estimated cancer risk of one in a million or less, and a chronic hazard
 - c. BAAQMD Reg 11 Rule 16 required that all co-residential (sharing a wall, floor, ceiling or is in the same building as a residential unit) dry cleaners cease use of perc on July 1, 2010. Therefore, there is no cancer risk, hazard or PM_{2.5} concentrations from co-residential dry cleaning businesses in the BAAQMD.
 - d. Non co-residential dry cleaners must phase out use of perc by Jan. 1, 2023. Therefore, the risk from these dry cleaners does not need to be factored in over a 70-year period, but
 - e. Gas stations can be adjusted using BAAQMD's Gas Station Distance Multiplier worksheet.
 - f. Unless otherwise noted, exempt sources are considered insignificant. See BAAQMD Reg 2 Rule 1 for a list of exempt sources.
 - g. This spray booth is considered to be insignificant.

Date last updated:
03/13/2018

DISTRICT RESPONSE TO REQUEST



BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Risk & Hazard Stationary Source Inquiry Form

This form is required when users request stationary source data from BAAQMD

This form is to be used with the BAAQMD's Google Earth stationary source screening tables.

[Click here for guidance on conducting risk & hazard screening, including roadways & freeways, refer to the District's Risk & Hazard Analysis flow chart.](#)

[Click here for District's Recommended Methods for Screening and Modeling Local Risks and Hazards document.](#)

Table A: Requester Contact Information	
Date of Request	1/10/2019
Contact Name	Mimi McNamara
Affiliation	Illingworth & Rodkin, Inc.
Phone	707-794-040 X111
Email	mnamara@illingworthrodkin.com
Project Name	Charcot Road Extension
Address	
City	San Jose
County	Santa Clara
Type (residential, commercial, mixed use, industrial, etc.)	Roadway extension
Project Size (# of units or building square feet)	
Comments:	

For Air District assistance, the following steps must be completed:

- Complete all the contact and project information requested in **Table A**. Incomplete forms will not be processed. Please include a project site map.
- Download and install the free program Google Earth, <http://www.google.com/earth/download/ge/>, and then download the county specific Google Earth stationary source application files from the District's website, <http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx>. The small points on the map represent stationary sources permitted by the District (Map A on right). These permitted sources include diesel back-up generators, gas stations, dry cleaners, boilers, printers, auto spray booths, etc. Click on a point to view the source's information Table, including the name, location, and preliminary estimated cancer risk, hazard index, and PM2.5 concentration.
- Find the project site in Google Earth by inputting the site's address in the Google Earth search box.
- Identify stationary sources within at least a 1000ft radius of project site. Verify that the location of the source on the map matches with the source's address in the Information Table, by using the Google Earth address search box to confirm the source's address location. Please report any mapping errors to the District.
- List the stationary source information in **Table B** section only.
- Note that a small percentage of the stationary sources have Health Risk Screening Assessment (HRS) data INSTEAD of screening level data. These sources will be noted by an asterisk next to the Plant Name (Map B on right). If HRS values are presented, these values have already been modeled and cannot be adjusted further.
- Email this completed form to District staff. District staff will provide the most recent risk, hazard, and PM2.5 data that are available for the source(s). If this information or data are not available, source emissions data will be provided. Staff will respond to inquiries within three weeks.

Note that a public records request received for the same stationary source information will cancel the processing of your SIF request.

Submit forms, maps, and questions to Areana Flores at 415-749-4616, or aflores@baaqmd.gov

ADJUSTED RISK VALUES

Table B: Google Earth data

Distance from Receptor (feet) or MEI ¹											Construction MEI			
	Facility Name	Address	Plant No.	Cancer Risk ²	Hazard Risk ²	PM _{2.5} ²	Source No. ³	Type of Source ⁴	Fuel Code ⁵	Status/Comments	Distance Adjustment Multiplier	Adjusted Cancer Risk Estimate	Adjusted Hazard Risk	Adjusted PM2.5
No distance adjustment	Southwest Offset Printing Co, Inc	587 Charcot Avenue	20285		0.0712		S1-S3	Surface coating (3)						
No distance adjustment	Applied Anodize Inc	622 Charcot Ave, Unit D	6919	58.924	0.0008	0.01012	S1-S5	Evaporative Tank (1), Boiler (4)			With Beta Calculator Modeling	0.0052	1.26E-04	0.01
No distance adjustment	Epiphonics Corp	770 Charcot Avenue	20442		0.0002	0.0001	S1	Solvent Cleaning						
No distance adjustment	Sanmina Corporation	2101 O'Toole Avenue	1618		0.2043		S2, S18, S19	Ammonia Etcher, Process Tank (2)						
> 1000	SFP, LP	2150 Kruse Drive	4020	100.146	0.5010			Multiple		Emissions file attached	0.014964725	1.50	0.75079604	

Footnotes:

- Maximally exposed individual
- These Cancer Risk, Hazard Index, and PM2.5 columns represent the values in the Google Earth Plant Information Table.
- Each plant may have multiple permits and sources.
- Permitted sources include diesel back-up generators, gas stations, dry cleaners, boilers, printers, auto spray booths, etc.
- Fuel codes: 98 = diesel, 189 = Natural Gas.
- If a Health Risk Screening Assessment (HRS) was completed for the source, the application number will be listed here.
- The date that the HRS was completed.
- Engineer who completed the HRS. For District purposes only.
- All HRS completed before 1/5/2010 need to be multiplied by an age sensitivity factor of 1.7.
- The HRS "Chronic Health" number represents the Hazard Index.
- Further information about common sources:
 - Sources that only include diesel internal combustion engines can be adjusted using the BAAQMD's Diesel Multiplier worksheet.
 - The risk from natural gas boilers used for space heating when <25 MM BTU/hr would have an estimated cancer risk of one in a million or less, and a chronic hazard
 - BAAQMD Reg 11 Rule 16 required that all co-residential (sharing a wall, floor, ceiling or is in the same building as a residential unit) dry cleaners cease use of perc on July 1, 2010. Therefore, there is no cancer risk, hazard or PM2.5 concentrations from co-residential dry cleaning businesses in the BAAQMD.
 - Non co-residential dry cleaners must phase out use of perc by Jan. 1, 2023. Therefore, the risk from these dry cleaners does not need to be factored in over a 70-year period.
 - Gas stations can be adjusted using BAAQMD's Gas Station Distance Multiplier worksheet.
 - Unless otherwise noted, exempt sources are considered insignificant. See BAAQMD Reg 2 Rule 1 for a list of exempt sources.
 - This spray booth is considered to be insignificant.

Date last updated:
03/13/2018

School Children

Distance from Receptor (feet) or MEI ¹	Distance Adjustment Multiplier	Adjusted Cancer Risk Estimate	Adjusted Hazard Risk	Adjusted PM2.5
No distance adjustment				
No distance adjustment	With Beta Calculator Modeling	0.0052	1.26E-04	
No distance adjustment				
No distance adjustment				
>1,000	0.014964725	1.50	0.750796045	

How to Use the Distance Adjustment Multiplier Tool for Gasoline Dispensing Facilities (GDF)

This distance multiplier tool refines the screening values for cancer risk and chronic hazard index found in the District's Stationary Source Screening Analysis Tool to represent adjusted risk and hazard impacts that can be expected with farther distances from the source of emissions (GDF's).

1. Obtain the GDF cancer risk and/or chronic hazard index from the District's Stationary Source Screening Analysis tool for facilities where the Plant No. is preceded with a 'G'. If the distance to the nearest receptor is less than 20 meters, the distance adjustment multiplier table cannot be used and an air dispersion modeling analysis using site-specific information is needed to refine the cancer risk and/or chronic hazard index estimate.
2. Determine the shortest distance from the GDF to the nearest receptor.
3. In the table below, enter the cancer risk and/or chronic hazard index found in step 1 for the GDF in the row which aligns with the shortest distance from each GDF to the nearest receptor (found in step 2). If the shortest distance to the receptor falls between two distance values, select the multiplier corresponding to the smaller distance. For distances beyond 300 meters, use the multiplier 0.015. The resulting product is the adjusted cancer risk in a million or the adjusted chronic hazard index for the GDF.

Note: These distance adjustment multipliers may be used only for the screening level health risk values indicated in the District's Stationary Source Screening Analysis tool for gasoline dispensing facilities. This distance multiplier tool may not be used to adjust values from an HRA if an HRA for the facility was conducted.

Distance meters	Distance feet	Distance adjustment multiplier	Enter Cancer Risk	Adjusted Cancer Risk	Enter Chronic Hazard Index	Adjusted Chronic Hazard Index
20	66	1.000		0		0
25	82	0.728		0		0
30	98	0.559		0		0
35	115	0.445		0		0
40	131	0.365		0		0
45	148	0.305		0		0
50	164	0.260		0		0
55	180	0.225		0		0
60	197	0.197		0		0
65	213	0.174		0		0
70	230	0.155		0		0
75	246	0.139		0		0
80	262	0.126		0		0
85	279	0.114		0		0
90	295	0.104		0		0
95	312	0.096		0		0
100	328	0.088		0		0
105	344	0.082		0		0
110	361	0.076		0		0
115	377	0.071		0		0
120	394	0.066		0		0
125	410	0.062		0		0
130	426	0.058		0		0
135	443	0.055		0		0
140	459	0.052		0		0
145	476	0.049		0		0
150	492	0.046		0		0
155	508	0.044		0		0
160	525	0.042		0		0
165	541	0.040		0		0
170	558	0.038		0		0
175	574	0.036		0		0
180	590	0.034		0		0
185	607	0.033		0		0
190	623	0.031		0		0
195	640	0.030		0		0
200	656	0.029		0		0
205	672	0.028		0		0
210	689	0.027		0		0
215	705	0.026		0		0
220	722	0.025		0		0
225	738	0.024		0		0
230	754	0.023		0		0
235	771	0.022		0		0
240	787	0.022		0		0
245	804	0.021		0		0
250	820	0.020		0		0
255	836	0.020		0		0
260	853	0.019		0		0
265	869	0.018		0		0
270	886	0.018		0		0
275	902	0.017		0		0
280	918	0.017		0		0
285	935	0.016		0		0
290	951	0.016		0		0
295	968	0.015		0		0
300	984	0.015		0		0

How to Use the Distance Adjustment Multiplier Tool for Diesel Internal Combustion (IC) Engines

This distance multiplier tool refines the screening values for cancer risk and PM2.5 concentrations found in the District's Stationary Source Screening Analysis Tool for permitted facilities which contain only diesel IC engines, to represent adjusted risk and hazard impacts that can be expected with farther distances from the source of emissions.

1. Obtain the facility diesel IC engine(s) cancer risk and/or PM2.5 concentration from the District's Stationary Source Screening Analysis tool only for facilities where the source is listed as "generator." If the distance to the nearest receptor is less than 25 meters, the distance adjustment multiplier table cannot be used and an air dispersion modeling analysis using site-specific information is needed to refine the cancer risk, chronic hazard index or PM2.5 estimates.
2. Determine the shortest distance from each diesel IC engine to the nearest receptor. Select the shortest distance to receptor found.
3. In the table below, enter the cancer risk and/or PM2.5 concentration found in step 1 for the diesel IC engine in the row which aligns with the shortest distance from each diesel IC engine to the nearest receptor (found in step 2). If the shortest distance to the receptor falls between two distance values, select the multiplier corresponding to the smaller distance. For distances beyond 280 meters, use the multiplier 0.04. The resulting product is the adjusted cancer risk in a million or the adjusted PM2.5 concentration for the diesel IC engine

Note: This distance adjustment multiplier may be used only for the screening level health risk values indicated in the District's Stationary Source Screening Analysis tool for diesel IC engines. This distance multiplier tool may not be used to adjust values from an HRA if an HRA for the facility was conducted.

Note: This distance adjustment multiplier may also be used to adjust the screening values for chronic hazard index found in the District's Stationary Source Screening Analysis Tool for facilities with only diesel IC engines.

Distance (meters)	Distance (feet)	Distance Adjustment Multiplier	Enter Cancer Risk Estimate	Adjusted Cancer Risk Estimate	Enter PM2.5 Concentration	Adjusted PM2.5 Concentration
25	82	0.85		0		0
30	98.4	0.73		0		0
35	115	0.64		0		0
40	131	0.58		0		0
50	164	0.5		0		0
60	197	0.41		0		0
70	230	0.31		0		0
80	262	0.28		0		0
90	295	0.25		0		0
100	328	0.22		0		0
110	361	0.18		0		0
120	394	0.16		0		0
130	426	0.15		0		0
140	459	0.14		0		0
150	492	0.12		0		0
160	525	0.1		0		0
180	590	0.09		0		0
200	656	0.08		0		0
220	722	0.07		0		0
240	787	0.06		0		0
260	853	0.05		0		0
280	918	0.04		0		0

BAAQMD Risk and Hazards Emissions Screening Calculator Instructions (Beta Version)

Based on emissions data provided by BAAQMD, this calculator will estimate screening-level cancer risk, PM2.5 concentrations, and non-cancer acute/chronic indices. This method should only be used for permitted facilities where screening-level risks have not already been calculated by BAAQMD and BAAQMD Health Risk Screening Assessments have not been completed.

BAAQMD staff will provide emissions information for each requested permitted facility. If a facility contains more than one permitted source, the plant's total emissions can be used, which BAAQMD staff will provide.

Below, note that there are individual worksheets for estimating cancer risk, non-cancer chronic hazard, non-cancer acute hazard and PM2.5 concentrations. To calculate risks, etc., enter daily emissions in each worksheet in column B for each chemical in the emissions printout. Sum the individual risk and hazard from each chemical to determine the total risks and hazards at the facility.

EXAMPLE:

BAY AREA AIR QUALITY MANAGEMENT DISTRICT
DETAIL POLLUTANTS - ABATED
MOST RECENT P/O APPROVED (2011)

Printed: DEC 22, 2011

Plant Name: Example 1

S#	SOURCE NAME	
MATERIAL	SOURCE CODE	
THROUGHPUT	DATE	POLLUTANT
	CODE	LBS/ DAY

This plant contains 4 permitted sources. These source emissions are combined and presented in the plant total:

Daily emissions

PLANT TOTAL:

Lbs/day	Pollutant
41	Benzene
124	Formaldehyde
990	Organics (part not spec el)
1030	Arsenic (all)
1040	Beryllium (all) pollutant
1070	Cadmium
1095	Chromium (hexavalent)
1140	Lead (all) pollutant
1160	Manganese
1180	Nickel pollutant
1190	Mercury (all) pollutant
1350	Diesel Engine Exhaust Part
1840	PAHs (non-specified)
2030	Nitrous Oxide (NO ₂)
2990	Nitrogen Oxides (part not
3990	Sulfur Dioxide (SO ₂)
4990	Carbon Monoxide (CO) pollutant
6960	Carbon Dioxide, non-biogenic
6970	Methane (CH ₄)

Pollutant Name	Emission/lbs per day	Cancer Risk
ARSENIC	1.09E-06	5.50E-08
BENZENE	1.26E-03	1.22E-07
BERYLLIUM	6.41E-07	4.98E-09
CADMIUM	2.73E-06	3.79E-08
CHROMIUM	5.65E-08	2.67E-08
DIESEL PM	6.31E-02	6.70E-05
FORMALDEHYDE	1.04E-04	2.11E-09
LEAD	2.32E-06	2.65E-10
NICKEL	4.42E-05	3.73E-08
PAH'S	5.77E-06	5.77E-06
TOTAL:		7.31E-05

Using this screening approach, the cancer risk associated with this facility is estimated to be 7.31E-05, also expressed as **73 in a million**. If the facility contains only diesel back-up engines, the distance multiplier can be used to adjust the estimated cancer risk.

Note: Not all of the chemicals being emitted by the plant in this example are associated with cancer risk, therefore those chemicals are not included in the cancer risk estimation. Similarly, not all of the chemicals emitted by the plant in this example are associated with acute or chronic hazards.

Plug in the emissions in column B in the remaining tabs in the same fashion to estimate chronic and acute hazards, and PM2.5 concentrations.

Notes: Created 7/11/2012. Version 1.3 Beta. This calculator will create screening level values. More detailed modeling methods will result in more accurate values. For questions and comments contact Alison Kirk at akirk@baaqmd.gov.

Plant #:
Plant Name:
Number of Sources:

6919
Applied Anodize Inc
5

Pollutant Name	Emissions/lbs per day	Cancer Risk (in millions)
ACETALDEHYDE		0.00E+00
ACETAMIDE		0.00E+00
ACRYLAMIDE		0.00E+00
ACRYLONITRILE		0.00E+00
ALLYL CHLORIDE		0.00E+00
2-AMINOANTHRAQUINONE		0.00E+00
ANILINE		0.00E+00
ARSENIC AND COMPOUNDS (INORGANIC) ^{1,2}		0.00E+00
ASBESTOS ³		0.00E+00
BENZENE ¹	1.13E-05	1.09E-09
BENZIDINE (AND ITS SALTS) - values also apply to: <i>Benzidine based dyes</i>		0.00E+00
<i>Direct Black 38</i>		0.00E+00
<i>Direct Blue 6</i>		0.00E+00
<i>Direct Brown 95 (technical grade)</i>		0.00E+00
BENZYL CHLORIDE		0.00E+00
BERYLLIUM AND COMPOUNDS ²		0.00E+00
BIS(2-CHLOROETHYL)ETHER (Dichloroethyl ether)		0.00E+00
BIS(CHLOROMETHYL)ETHER		0.00E+00
POTASSIUM BROMATE		0.00E+00
1,3-BUTADIENE		0.00E+00
CADMIUM AND COMPOUNDS ²		0.00E+00
CARBON TETRACHLORIDE ¹ (Tetrachloromethane)		0.00E+00
CHLORINATED PARAFFINS		0.00E+00
4-CHLORO-O-PHENYLENEDIAMINE		0.00E+00
CHLOROFORM ¹		0.00E+00
PENTACHLOROPHENOL		0.00E+00
2,4,6-TRICHLOROPHENOL		0.00E+00
p-CHLORO-o-TOLUIDINE		0.00E+00
CHROMIUM 6+2		0.00E+00
<i>Barium chromate2</i>		0.00E+00
<i>Calcium chromate2</i>		0.00E+00
<i>Lead chromate2</i>		0.00E+00
<i>Sodium dichromate2</i>		0.00E+00
<i>Strontium chromate2</i>		0.00E+00
CHROMIC TRIOXIDE (as chromic acid mist)		0.00E+00
p-CRESIDINE		0.00E+00
CUPFERRON		0.00E+00
2,4-DIAMINOANISOLE		0.00E+00
2,4-DIAMINOTOLUENE		0.00E+00
1,2-DIBROMO-3-CHLOROPROPANE (DBCP)		0.00E+00
1,4-DICHLOROBENZENE		0.00E+00
3,3-DICHLOROBENZIDINE		0.00E+00
1,1-DICHLOROETHANE (Ethylidene dichloride)		0.00E+00
DI(2-ETHYLHEXYL)PHTHALATE (DEHP)		0.00E+00
p-DIMETHYLAMINOAZOBENZENE		0.00E+00
2,4-DINITROTOLUENE		0.00E+00
1,4-DIOXANE (1,4-Diethylene dioxide)		0.00E+00
EPICHLOROHYDRIN (1-Chloro-2,3-epoxypropane)		0.00E+00
ETHYL BENZENE		0.00E+00
ETHYLENE DIBROMIDE (1,2-Dibromoethane)		0.00E+00
ETHYLENE DICHLORIDE (1,2-Dichloroethane)		0.00E+00
ETHYLENE OXIDE (1,2-Epoxyethane)		0.00E+00
ETHYLENE THIOUREA		0.00E+00
FORMALDEHYDE	1.33E-04	2.70E-09
HEXACHLOROBENZENE		0.00E+00
HEXACHLOROCYCLOHEXANES (mixed or technical grade)		0.00E+00
alpha-HEXACHLOROCYCLOHEXANE		0.00E+00
beta- HEXACHLOROCYCLOHEXANE		0.00E+00
gamma-HEXACHLOROCYCLOHEXANE (Lindane)		0.00E+00
HYDRAZINE		0.00E+00
LEAD AND COMPOUNDS 2,4 (inorganic) - values also apply to: <i>Lead acetate2</i>		0.00E+00
<i>Lead phosphate2</i>		0.00E+00
<i>Lead subacetate2</i>		0.00E+00
METHYL tertiary-BUTYL ETHER		0.00E+00
4,4'-METHYLENE BIS (2-CHLOROANILINE) (MOCA)		0.00E+00
METHYLENE CHLORIDE (Dichloromethane)		0.00E+00
4,4'-METHYLENE DIANILINE (AND ITS DICHLORIDE)		0.00E+00
MICHLER'S KETONE (4,4'-Bis(dimethylamino)benzophenone)		0.00E+00
N-NITROSODI-n-BUTYLAMINE		0.00E+00
N-NITROSODI-n-PROPYLAMINE		0.00E+00
N-NITROSODIETHYLAMINE		0.00E+00
N-NITROSODIMETHYLAMINE		0.00E+00
N-NITROSODIPHENYLAMINE		0.00E+00
N-NITROSO-N-METHYLETHYLAMINE		0.00E+00
N-NITROSOMORPHOLINE		0.00E+00
N-NITROSOPIPERIDINE		0.00E+00
N-NITROSOPYRROLIDINE		0.00E+00
NICKEL AND COMPOUNDS2 (values also apply to.) <i>Nickel acetate2</i>		0.00E+00
<i>Nickel carbonate2</i>		0.00E+00
<i>Nickel carbonyl2</i>		0.00E+00
<i>Nickel hydroxide2</i>		0.00E+00
<i>Nickelocene2</i>		0.00E+00
NICKEL OXIDE2		0.00E+00
<i>Nickel refinery dust from the pyrometallurgical process2</i>		0.00E+00
<i>Nickel subsulfide2</i>		0.00E+00
p-NITROSODIPHENYLAMINE		0.00E+00
PARTICULATE EMISSIONS FROM DIESEL-FUELED ENGINES		0.00E+00
PERCHLOROETHYLENE (Tetrachloroethylene)		0.00E+00
PCB (POLYCHLORINATED BIPHENYLS) [low risk] 2,6		0.00E+00
PCB (POLYCHLORINATED BIPHENYLS) [high risk] 2,6		0.00E+00
POLYCHLORINATED DIBENZO-P-DIOXINS (PCDD)(AS 2,3,7,8-PCDD EQUIV) 2,7		0.00E+00
2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN2,7		0.00E+00
POLYCHLORINATED DIBENZOFURANS (PCDF)(AS 2,3,7,8-PCDD EQUIV) 2,7		0.00E+00
2,3,7,8-TETRACHLORODIBENZOFURAN2,7		0.00E+00
POLYCYCLIC AROMATIC HYDROCARBON2 (PAH) (AS B(a)P-EQUIV)5		0.00E+00
BENZO(A)PYRENE2,5		0.00E+00
NAPHTHALENE		0.00E+00
1,3-PROPANE SULTONE		0.00E+00
PROPYLENE OXIDE		0.00E+00
1,1,2,2-TETRACHLOROETHANE		0.00E+00
THIOACETAMIDE		0.00E+00
<i>Toluene diisocyanates</i>		0.00E+00
TOLUENE-2,4-DIISOCYANATE		0.00E+00
TOLUENE-2,6-DIISOCYANATE		0.00E+00
1,1,2-TRICHLOROETHANE (Vinyl trichloride)		0.00E+00
TRICHLOROETHYLENE		0.00E+00
URETHANE (Ethyl carbamate)		0.00E+00
VINYL CHLORIDE (Chloroethylene)		0.00E+00
	TOTAL:	3.79E-09

Plant #:

6919

Plant Name:

Applied Anodize Inc

Number of Sources:

5

Pollutant Name	Emission/lbs per day	Chronic Hazard
ACETALDEHYDE	0	0
ACROLEIN		0
ACRYLONITRILE		0
AMMONIA		0
ARSENIC AND COMPOUNDS (INORGANIC)1,2		0
ARSINE		0
BENZENE1	1.13E-05	3.55532E-07
BERYLLIUM AND COMPOUNDS2		0
1,3-BUTADIENE		0
CADMIUM AND COMPOUNDS2		0
CARBON DISULFIDE1		0
CARBON TETRACHLORIDE1 (Tetrachloromethane)		0
CHLORINE		0
CHLORINE DIOXIDE		0
CHLOROBENZENE		0
CHLOROFORM1		0
2,3,4,6-Tetrachlorophenol		0
CHLOROPICRIN		0
CHROMIUM 6+2		0
Barium chromate2		0
Calcium chromate2		0
Lead chromate2		0
Sodium dichromate2		0
Strontium chromate2		0
CHROMIC TRIOXIDE (as chromic acid mist)		0
CRESOLS		0
M-CRESOL		0
O-CRESOL		0
P-CRESOL		0
Cyanide And Compounds (inorganic)		0
HYDROGEN CYANIDE (Hydrocyanic acid)		0
1,4-DICHLOROBENZENE		0
DIETHANOLAMINE		0
DIMETHYLAMINE		0
N,N-DIMETHYL FORMAMIDE		0
1,4-DIOXANE (1,4-Diethylene dioxide)		0
EPICHLOROHYDRIN (1-Chloro-2,3-epoxypropane)		0
1,2-EPOXYBUTANE		0
ETHYL BENZENE		0
ETHYL CHLORIDE (Chloroethane)		0
ETHYLENE DIBROMIDE (1,2-Dibromoethane)		0
ETHYLENE DICHLORIDE (1,2-Dichloroethane)		0
ETHYLENE GLYCOL		0
ETHYLENE OXIDE (1,2-Epoxyethane)		0
Fluorides		0
HYDROGEN FLUORIDE (Hydrofluoric acid)		0
FORMALDEHYDE	1.33E-04	2.78972E-05
GASOLINE VAPORS		0
GLUTARALDEHYDE		0
ETHYLENE GLYCOL ETHYL ETHER – EGEE1		0
ETHYLENE GLYCOL ETHYL ETHER ACETATE – EGEEA1		0
ETHYLENE GLYCOL METHYL ETHER – EGME1		0
ETHYLENE GLYCOL METHYL ETHER ACETATE – EGMEA		0
n-HEXANE		0
HYDRAZINE		0
HYDROCHLORIC ACID (Hydrogen chloride)		0
HYDROGEN SULFIDE		0
ISOPHORONE		0
ISOPROPYL ALCOHOL (Isopropanol)		0
MALEIC ANHYDRIDE		0
MANGANESE AND COMPOUNDS		0
MERCURY AND COMPOUNDS (INORGANIC) values also apply to:		0
Mercuric chloride		0
METHANOL		0
METHYL BROMIDE (Bromomethane)		0
METHYL tertiary-BUTYL ETHER		0
METHYL CHLOROFORM (1,1,1-Trichloroethane)		0
METHYL ISOCYANATE		0
METHYLENE CHLORIDE (Dichloromethane)		0
4,4'-METHYLENE DIANILINE (AND ITS DICHLORIDE)		0
METHYLENE DIPHENYL ISOCYANATE		0
NICKEL AND COMPOUNDS2 (values also apply to):		0
Nickel acetate2		0
Nickel carbonate2		0
Nickel carbonyl2		0
Nickel hydroxide2		0
Nickelocene2		0
NICKEL OXIDE2		0
Nickel refinery dust from the pyrometallurgical process2		0
Nickel subsulfide2		0
NITROGEN DIOXIDE		0
PARTICULATE EMISSIONS FROM DIESEL-FUELED ENGINES		0
PERCHLOROETHYLENE (Tetrachloroethylene)		0
PHENOL		0
PHOSPHINE		0
PHOSPHORIC ACID		0
PHOSPHORUS (WHITE)		0
PHTHALIC ANHYDRIDE		0
POLYCHLORINATED DIBENZO-P-DIOXINS (PCDD)(AS 2,3,7,8-PCDD EQUIV) 2,7		0
2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN2,7		0
1,2,3,7,8-PENTACHLORODIBENZO-P-DIOXIN2,7		0
1,2,3,4,7,8-HEXACHLORODIBENZO-P-DIOXIN2,7		0
1,2,3,6,7,8-HEXACHLORODIBENZO-P-DIOXIN2,7		0
1,2,3,7,8,9-HEXACHLORODIBENZO-P-DIOXIN2,7		0
1,2,3,4,6,7,8-HEPTACHLORODIBENZO-P-DIOXIN2,7		0
1,2,3,4,6,7,8,9-OCTACHLORODIBENZO-P-DIOXIN2,7		0
POLYCHLORINATED DIBENZOFURANS (PCDF)(AS 2,3,7,8-PCDD EQUIV) 2,7		0
2,3,7,8-TETRACHLORODIBENZOFURAN2,7		0
1,2,3,7,8-PENTACHLORODIBENZOFURAN2,7		0
2,3,4,7,8-PENTACHLORODIBENZOFURAN2,7		0
1,2,3,4,7,8-HEXACHLORODIBENZOFURAN2,7		0
1,2,3,6,7,8-HEXACHLORODIBENZOFURAN2,7		0
1,2,3,7,8,9-HEXACHLORODIBENZOFURAN2,7		0
2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN2,7		0
1,2,3,4,6,7,8-HEPTACHLORODIBENZOFURAN2,7		0
1,2,3,4,7,8,9-HEPTACHLORODIBENZOFURAN2,7		0
1,2,3,4,6,7,8,9-OCTACHLORODIBENZOFURAN2,7		0
NAPHTHALENE		0
PROPYLENE (PROPENE)		0
PROPYLENE GLYCOL MONOMETHYL ETHER		0
PROPYLENE OXIDE		0
SELENIUM AND COMPOUNDS		0
Selenium sulfide		0
SILICA (Crystalline, Respirable)		0
STYRENE		0
SULFUR DIOXIDE	1.01E-03	2.88887E-06
SULFURIC ACID AND OLEUM		0
SULFURIC ACID		0
SULFUR TRIOXIDE		0
OLEUM		0
TOLUENE	6.03E-06	3.79443E-08
Toluene diisocyanates		0
TOLUENE-2,4-DIISOCYANATE		0
TOLUENE-2,6-DIISOCYANATE		0
TRICHLOROETHYLENE		0
TRIETHYLAMINE		0
VINYL ACETATE		0
VINYLDENE CHLORIDE (1,1-Dichloroethylene)		0
XYLENES (mixed isomers)		0
m-XYLENE		0
o-XYLENE		0
p-XYLENE		0
TOTAL:		3.12E-05

Plant #:

6919

Plant Name:

Applied Anodize Inc

Number of Sources:

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Pollutant Name	Emission/lbs per day	Acute Hazard
ACETALDEHYDE	0	0
ACROLEIN		0
ACRYLIC ACID		0
AMMONIA		0
ARSENIC AND COMPOUNDS (INORGANIC)1,2		0
ARSINE		0
BENZENE1	1.13E-05	1.64092E-07
BENZYL CHLORIDE		0
CARBON DISULFIDE1		0
CARBON MONOXIDE	6.21E-02	5.097E-05
CARBON TETRACHLORIDE1 (Tetrachloromethane)		0
CHLORINE		0
CHLOROFORM1		0
CHLOROPICRIN		0
COPPER AND COMPOUNDS		0
Cyanide And Compounds (inorganic)		0
HYDROGEN CYANIDE (Hydrocyanic acid)		0
1,4-DIOXANE (1,4-Diethylene dioxide)		0
EPICHLOROHYDRIN (1-Chloro-2,3-epoxypropane)		0
Fluorides		0
HYDROGEN FLUORIDE (Hydrofluoric acid)		0
FORMALDEHYDE	1.33E-04	4.56499E-05
ETHYLENE GLYCOL BUTYL ETHER – EGBE		0
ETHYLENE GLYCOL ETHYL ETHER – EGEE1		0
ETHYLENE GLYCOL ETHYL ETHER ACETATE – EGEEA1		0
ETHYLENE GLYCOL METHYL ETHER – EGME1		0
HYDROCHLORIC ACID (Hydrogen chloride)		0
HYDROGEN SULFIDE		0
ISOPROPYL ALCOHOL (Isopropanol)		0
MERCURY AND COMPOUNDS (INORGANIC) values also apply to:		0
Mercuric chloride		0
METHANOL		0
METHYL BROMIDE (Bromomethane)		0
METHYL CHLOROFORM (1,1,1-Trichloroethane)		0
METHYL ETHYL KETONE (2-Butanone)		0
METHYLENE CHLORIDE (Dichloromethane)		0
NICKEL AND COMPOUNDS2 (values also apply to:)		0
Nickel acetate2		0
Nickel carbonate2		0
Nickel carbonyl2		0
Nickel hydroxide2		0
Nickelocene2		0
NICKEL OXIDE2		0
Nickel refinery dust from the pyrometallurgical process2		0
Nickel subsulfide2		0
NITRIC ACID		0
OZONE		0
PROPYLENE OXIDE		0
HYDROGEN SELENIDE		0
SODIUM HYDROXIDE		0
STYRENE		0
SULFATES		0
SULFUR DIOXIDE	1.01E-03	2.88887E-05
SULFURIC ACID AND OLEUM		0
SULFURIC ACID		0
SULFUR TRIOXIDE		0
OLEUM		0
TOLUENE	6.03E-06	3.07657E-09
TRIETHYLAMINE		0
Vanadium (fume or dust)		0
VANADIUM PENTOXIDE		0
VINYL CHLORIDE (Chloroethylene)		0
XYLENES (mixed isomers)		0
m-XYLENE		0
o-XYLENE		0
p-XYLENE		0
TOTAL:		1.26E-04

Applied Anodize Inc

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Diesel PM Concentrations	Emissions (lbs/day)	PM2.5 Concentration (ug/m3)
		0
		0
		0
		0
		0
		0
		0
		0
		0
		0
		0
		0
		0
		0
		0
TOTAL:		0

Distance meters	Distance feet	Distance adjustment multiplier	Enter Risk or Hazard	Adjusted Risk or Hazard
20	66	1.000		0
25	82	0.728		0
30	98	0.559		0
35	115	0.445		0
40	131	0.365		0
45	148	0.305		0
50	164	0.260		0
55	180	0.225		0
60	197	0.197		0
65	213	0.174		0
70	230	0.155		0
75	246	0.139		0
80	262	0.126		0
85	279	0.114		0
90	295	0.104		0
95	312	0.096		0
100	328	0.088		0
105	344	0.082		0
110	361	0.076		0
115	377	0.071		0
120	394	0.066		0
125	410	0.062		0
130	426	0.058		0
135	443	0.055		0
140	459	0.052		0
145	476	0.049		0
150	492	0.046		0
155	508	0.044		0
160	525	0.042		0
165	541	0.040		0
170	558	0.038		0
175	574	0.036		0
180	590	0.034		0
185	607	0.033		0
190	623	0.031		0
195	640	0.030		0
200	656	0.029		0
205	672	0.028		0
210	689	0.027		0
215	705	0.026		0
220	722	0.025		0
225	738	0.024		0
230	754	0.023		0
235	771	0.022		0
240	787	0.022		0
245	804	0.021		0
250	820	0.020		0
255	836	0.020		0
260	853	0.019		0
265	869	0.018		0
270	886	0.018		0
275	902	0.017		0
280	918	0.017		0
285	935	0.016		0
290	951	0.016		0
295	968	0.015		0
300	984	0.015		0

Distance meters	Distance feet	Distance adjustment multiplier	Enter Risk or Hazard	Adjusted Risk or Hazard	Enter PM2.5 Concentration	Adjusted PM2.5 Concentration
25	82	0.85		0		0
30	98	0.73		0		0
35	115	0.64		0		0
40	131	0.58		0		0
50	164	0.5		0		0
60	197	0.41		0		0
70	230	0.31		0		0
80	262	0.28		0		0
90	295	0.25		0		0
100	328	0.22		0		0
110	361	0.18		0		0
120	394	0.16		0		0
130	426	0.15		0		0
140	459	0.14		0		0
150	492	0.12		0		0
160	525	0.1		0		0
180	590	0.09		0		0
200	656	0.08		0		0
220	722	0.07		0		0
240	787	0.06		0		0
260	853	0.05		0		0
280	918	0.04		0		0

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