APPENDIX A-1
AIR QUALITY AND GREENHOUSE GAS EMISSIONS ASSESSMENT

470 S. MARKET
DRAFT AIR QUALITY & GREENHOUSE GAS EMISSIONS ASSESSMENT

San Jose, CA

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Introduction

The purpose of this report is to address air quality, community risk, and greenhouse gas (GHG) emission impacts associated with the 470 S. Market mixed-use project in San Jose, California. The project proposes to construct and operate 308 apartment units and approximately 5,135 square feet (sf) of retail on a 0.5-acre site. The project would demolish existing buildings on-site. Community risk impacts could occur due to temporary construction emissions affecting nearby sensitive receptors and the placement of new project residences near S. Market Street (SR-82) and stationary sources of air pollutants. Criteria air pollutant and GHG emissions resulting from construction and project operation are also addressed. This analysis addresses those issues following the guidance provided by the Bay Area Air Quality Management District (BAAQMD).

Setting

The project is located in 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 (PM_{10}), and fine particulate matter ($PM_{2.5}$).

Air Pollutants of Concern

High ozone levels are caused by the cumulative emissions of reactive organic gases (ROG) and nitrogen oxides (NOx). These precursor pollutants react under certain meteorological conditions to form high ozone levels. Controlling the emissions of these precursor pollutants is the focus of the Bay Area's attempts to reduce ozone levels. The highest ozone levels in the Bay Area occur in the eastern and southern inland valleys that are downwind of air pollutant sources. High ozone levels aggravate respiratory and cardiovascular diseases, reduced lung function, and increase coughing and chest discomfort.

Particulate matter is another problematic air pollutant of the Bay Area. Particulate matter is assessed and measured in terms of respirable particulate matter or particles that have a diameter of 10 micrometers or less (PM_{10}) and fine particulate matter where particles have a diameter of 2.5 micrometers or less ($PM_{2.5}$). Elevated concentrations of PM_{10} and $PM_{2.5}$ are the result of both region-wide (or cumulative) emissions and localized emissions. High particulate matter levels aggravate respiratory and cardiovascular diseases, reduce lung function, increase mortality (e.g., lung cancer), and result in reduced lung function growth in children.

Toxic Air Contaminants

Toxic air contaminants (TACs) are a broad class of compounds known to cause morbidity or mortality (usually because they cause cancer) and include, but are not limited to, the criteria air pollutants. TACs are found in ambient air, especially in urban areas, and are caused by industry, agriculture, fuel combustion, and commercial operations (e.g., dry cleaners). TACs are typically found in low concentrations, even near their source (e.g., diesel particulate matter near a

freeway). Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, State, and federal level.

Diesel exhaust is the predominant TAC in urban air and is estimated to represent about three-quarters of the cancer risk from TACs (based on the Bay Area average). According to the California Air Resources Board (CARB), diesel exhaust is a complex mixture of gases, vapors, and fine particles. This complexity makes the evaluation of health effects of diesel exhaust a complex scientific issue. Some of the chemicals in diesel exhaust, such as benzene and formaldehyde, have been previously identified as TACs by the CARB, and are listed as carcinogens either under the State's Proposition 65 or under the Federal Hazardous Air Pollutants programs.

CARB has adopted and implemented a number of regulations for stationary and mobile sources to reduce emissions of diesel particulate matter (DPM). Several of these regulatory programs affect medium and heavy duty diesel trucks that represent the bulk of DPM emissions from California highways. These regulations include the solid waste collection vehicle (SWCV) rule, in-use public and utility fleets, and the heavy-duty diesel truck and bus regulations. In 2008, CARB approved a new regulation to reduce emissions of DPM and nitrogen oxides from existing on-road heavy-duty diesel fueled vehicles.[1] The regulation requires affected vehicles to meet specific performance requirements between 2014 and 2023, with all affected diesel vehicles required to have 2010 model-year engines or equivalent by 2023. These requirements are phased in over the compliance period and depend on the model year of the vehicle.

The BAAQMD is the regional agency tasked with managing air quality in the region. At the State level, the CARB (a part of the California Environmental Protection Agency [EPA]) oversees regional air district activities and regulates air quality at the State level. The BAAQMD has recently published California Environmental Quality Act (CEQA) Air Quality Guidelines that are used in this assessment to evaluate air quality impacts of projects.[2]

Sensitive Receptors

There are groups of people more affected by air pollution than others. CARB has identified the following persons who are most likely to be affected by air pollution: children under 14, 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, elementary schools, and parks. The closest sensitive receptors to the project site are residences that are between about 230 and 250 feet southwest of the site across South Market Street.

Greenhouse Gases

Gases that trap heat in the atmosphere, GHGs, regulate the earth's temperature. This phenomenon, known as the greenhouse effect, is responsible for maintaining a habitable climate.

[1] Available online: http://www.arb.ca.gov/msprog/onrdiesel/onrdiesel.htm. Accessed: November 21, 2014.
[2] Bay Area Air Quality Management District. 2011. BAAQMD CEQA Air Quality Guidelines. May.

The most common GHGs are carbon dioxide (CO_2) and water vapor but there are also several others, most importantly methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). These are released into the earth's atmosphere through a variety of natural processes and human activities. Sources of GHGs are generally as follows:

- CO_2 and N_2O are byproducts of fossil fuel combustion.
- N_2O is associated with agricultural operations such as fertilization of crops.
- CH_4 is commonly created by off-gassing from agricultural practices (e.g., keeping livestock) and landfill operations.
- Chlorofluorocarbons (CFCs) were widely used as refrigerants, propellants, and cleaning solvents but their production has been stopped by international treaty.
- HFCs are now used as a substitute for CFCs in refrigeration and cooling.
- PFCs and sulfur hexafluoride emissions are commonly created by industries such as aluminum production and semi-conductor manufacturing.

Each GHG has its own potency and effect upon the earth's energy balance. This is expressed in terms of a global warming potential (GWP), with CO_2 being assigned a value of 1 and sulfur hexafluoride being several orders of magnitude stronger with a GWP of 23,900. In GHG emission inventories, the weight of each gas is multiplied by its GWP and is measured in units of CO_2 equivalents (CO_2e).

An expanding body of scientific research supports the theory that global warming is currently affecting changes in weather patterns, average sea level, ocean acidification, chemical reaction rates, and precipitation rates, and that it will increasingly do so in the future. The climate and several naturally occurring resources within California could be adversely affected by the global warming trend. Increased precipitation and sea level rise could increase coastal flooding, saltwater intrusion, and degradation of wetlands. Mass migration and/or loss of plant and animal species could also occur. Potential effects of global climate change that could adversely affect human health include more extreme heat waves and heat-related stress; an increase in climate-sensitive diseases; more frequent and intense natural disasters such as flooding, hurricanes and drought; and increased levels of air pollution.

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 May 2011). The significance thresholds identified by BAAQMD and used in this analysis are summarized in Table 1.

BAAQMD's adoption of significance thresholds contained in the 2011 CEQA Air Quality Guidelines was called into question by an order issued March 5, 2012, in California Building Industry Association (CBIA) v. BAAQMD (Alameda Superior Court Case No. RGI0548693). The order requires BAAQMD to set aside its approval of the thresholds until it has conducted

environmental review under CEQA. The ruling made in the case concerned the environmental impacts of adopting the thresholds and how the thresholds would indirectly affect land use development patterns. In August 2013, the Appellate Court struck down the lower court's order to set aside the thresholds. However, this litigation remains pending as the California Supreme Court recently accepted a portion of CBIA's petition to review the appellate court's decision to uphold BAAQMD's adoption of the thresholds. The specific portion of the argument to be considered is in regard to whether CEQA requires consideration of the effects of the environment on a project (as contrasted to the effects of a proposed project on the environment). Therefore, the significance thresholds contained in the 2011 CEQA Air Quality Guidelines are applied to this project.

Table 1. Air Quality Significance Thresholds

Pollutant	Construction Thresholds	Operational Thresholds	
	Average Daily Emissions (lbs./day)	Average Daily Emissions (lbs./day)	Annual Average Emissions (tons/year)
Criteria Air Pollutants			
ROG	54	54	10
NO_x	54	54	10
PM_{10}	82	82	15
$PM_{2.5}$	54	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 for New Sources			
Excess Cancer Risk	> 10.0 per one million		
Chronic or Acute Hazard Index	> 1.0		
Incremental annual average $PM_{2.5}$	> 0.3 µg/m^3		
Health Risks and Hazards for Sensitive Receptors (Cumulative from all sources within 1,000 foot zone of influence) and Cumulative Thresholds for New Sources			
Excess Cancer Risk	> 100.0 per one million		
Chronic Hazard Index	> 10.0		
Annual Average $PM_{2.5}$	> 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, NOx = nitrogen oxides, PM_{10} = course 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; and GHG = greenhouse gas.

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 *Bay Area 2010 Clean Air Plan* that was adopted by BAAQMD in September 2010. The proposed project would not conflict with the latest Clean Air planning efforts since, 1) the project would have emissions below the BAAQMD criteria pollutant thresholds (see Impact 2). The project, at 308 dwelling units is too small to exceed any of the criteria pollutant significance thresholds and, thus, it is not required to incorporate project-specific transportation control measures listed in the latest Clean Air Plan.

Impact 2: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable State or federal ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)? ***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 PM_{10} 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 PM_{10}, the BAAQMD has established thresholds of significance for these air pollutants and their precursors. These thresholds are for ozone precursor pollutants (ROG and NOx), PM_{10}, and $PM_{2.5}$ and apply to both construction period and operational period impacts.

The California Emissions Estimator Model (CalEEMod) Version 2013.2.2 was used to predict emissions from construction of the site assuming full build out of the project. The project land use types and size, and anticipated construction schedule were input to CalEEMod.

Construction period emissions

CalEEMod provided annual emissions for construction. CalEEMod provides emission estimates for both on-site and off-site construction activities. On-site activities are primarily made up of construction equipment emissions, while off-site activity includes worker, hauling, and vendor traffic. A construction build-out scenario, including equipment list and phasing schedule, was developed based on information provided by the project applicant. The project applicant expects cranes to be electrically-powered and that there will be temporary line power on-site. The proposed project land uses were input into CalEEMod, which included 308 dwelling units entered as "Apartments High Rise," and 5,135 sf entered as "Strip Mall"/retail on a 0.5-acre site. It was estimated that the project would require up to 26,900 cubic yards (cy) of soil export, which was entered into the model. In addition, approximately 2,730 round trips of cement trucks are anticipated during the building construction phase, and 150 cy of asphalt are anticipated during the paving phase. The 15,000 sf of anticipated building demolition and 150 tons of pavement demolition was also input to the model. The number of asphalt trips entered into the

model was based on an estimated 16 cy/truck, and the number of demolition trips was based on an estimated 20 tons/truck, which is based on the CalEEMod default.

The project schedule assumes that the project would be built out over a period of approximately 22 months beginning in 2016, or an estimated 484 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 2 shows average daily construction emissions of ROG, NO_X, PM_{10} exhaust, and $PM_{2.5}$ exhaust during construction of the project. As indicated in Table 2, predicted project emissions would not exceed the BAAQMD significance thresholds. *Attachment 1* includes the CalEEMod input and output values for construction emissions.

Construction activities, particularly during site preparation and grading, would temporarily generate fugitive dust in the form of PM_{10} 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 2. Construction Period Emissions

Scenario	ROG	NOx	PM_{10} Exhaust	$PM_{2.5}$ Exhaust
Construction emissions (tons)	3.29 tons	3.61 tons	0.15 tons	0.14 tons
Average daily emissions (pounds)[1]	13.6 lbs.	14.9 lbs.	0.6 lbs.	0.6 lbs.
BAAQMD Thresholds (pounds per day)	*54* lbs.	*54* lbs.	*82* lbs.	*54* lbs.
Exceed Threshold?	**No**	**No**	**No**	**No**
Notes: [1]Assumes 484 workdays.				

Operational Period Emissions

Operational air emissions from the project would be generated primarily from autos driven by future residences, and retail customers and employees. Evaporative emissions from architectural coatings and maintenance products (classified as consumer products) are typical emissions from these types of uses. CalEEMod was used to predict emissions from operation of the proposed project assuming full build-out. The same model run used to compute construction period emissions was used to predict operational emissions.

Model Year

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 CalEEMod. The earliest year the project could possibly be constructed and begin fully operating would be 2018. Emissions associated with build-out later than 2018 would be lower.

Trip Generation Rates

CalEEMod allows the user to enter specific vehicle trip generation rates, which were input to the model using the daily trip generation rate provided in the project traffic report. The trip rates accounted for reductions from mixed-use development, nearby transit, and the existing trip credit. The default trip lengths and trip types specified by CalEEMod were used.

Energy

Default rates for energy consumption were assumed in the model. CalEEMod has a default rate of 641.3 pounds of CO_2 per megawatt of electricity produced, which is based on PG&E's 2008 emissions rate. The PG&E rate was updated to be the most recent rate reported in the California Climate Registry that was for 2013, which is 429.64 pounds of CO_2 per megawatt of electricity produced.[3] Default model assumptions for GHG emissions associated with area sources, solid waste generation and water/wastewater use were applied to the project.

The 2013 Title 24 Building Standards recently became effective July 1, 2014 and are predicted to use 25 percent less energy for lighting, heating, cooling, ventilation, and water heating for residential and 30 percent less energy for non-residential than the 2008 standards that CalEEMod consumption rates are based upon.[4] Therefore, the CalEEMod runs were adjusted to account for the greater energy efficiency.

Other Inputs

Default model assumptions for GHG emissions associated with area sources and solid waste generation were applied to the project. No new wood-burning fireplaces are allowed in the Bay Area, but it was assumed that new residences could include gas-powered fireplaces.

Project Generator

The only source of stationary air pollutants identified with build-out of the project is assumed to be one emergency back-up generator. The maximum back-up power needs envisioned for this type of project would not be larger than 600 kW, provided by an approximate 805 horsepower engine, based on similar projects. It is assumed for this assessment that the generator would be driven by a diesel-fueled engine.

The emergency back-up generator would be used for backup power in emergency conditions. The generator will be operated for testing and maintenance purposes, with a maximum of 50 hours per year of non-emergency operation under normal conditions allowed by BAAQMD.

[3] See Climate Registry most current version of default emissions factors: http://www.theclimateregistry.org/tools-resources/reporting-protocols/general-reporting-protocol. Accessed: December 16, 2015.
[4] California Energy Commission, 2014. *New Title 24 Standards Will Cut Residential Energy Use by 25 Percent, Save Water, and Reduce Greenhouse Gas Emissions*. July. Available online: http://www.energy.ca.gov/releases/2014_releases/2014-07-01_new_title24_standards_nr.html. Accessed: July 29, 2015.

During testing periods the engine would typically be run for less than one hour. The engine would be required to meet CARB and U.S. EPA emission standards. The engine will consume commercially available California low-sulfur diesel fuel.

Emissions from the testing and maintenance of the generator were calculated using CARB's OFFROAD emissions model for large compression-ignited engines above 25 hp. Results of generator modeling are included in Table 3 below. Table 3 reports the predicted emissions in terms of net annual emissions in tons and average daily net operational emissions, assuming 365 days of operation per year. As shown in Table 3, net average daily and net annual emissions of ROG, NOx, PM_{10}, or $PM_{2.5}$ emissions associated with operation would not exceed the BAAQMD significance thresholds.

Table 3. Operational Emissions

Scenario	ROG	NOx	PM_{10}	$PM_{2.5}$
Net Annual Project Operational emissions (tons)	2.75 tons	1.72 tons	1.24 tons	0.36 tons
Annual Generator Emissions (tons)	<0.01 tons	0.05 tons	<0.01 tons	<0.01 tons
Total (tons)	<2.76 tons	1.77 tons	<1.25 tons	<0.37 tons
BAAQMD Thresholds (tons per year)	*10 tons*	*10 tons*	*15 tons*	*10 tons*
Exceed Threshold?	**No**	***No***	**No**	**No**
Average Daily Net Project Operational Emissions (pounds)[1]	15.1 lbs.	9.4 lbs.	6.8 lbs.	2.0 lbs.
Average Daily Generator Emissions (pounds)	<0.1 lbs.	0.3 lbs.	<0.1 lbs.	<0.1 lbs.
Total (pounds)	<15.2 lbs.	9.7 lbs.	<6.9 lbs.	<2.1 lbs.
BAAQMD Thresholds (pounds per day)	*54* lbs.	*54* lbs.	*82* lbs.	*54* lbs.
Exceed Threshold?	**No**	**No**	**No**	**No**

[1] Assumes 365-day operation.

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.

Impact 3: Violate any air quality standard or contribute substantially to an existing or projected air quality violation? ***Less than significant.***

As discussed under Impact 2, the project would have emissions less than the BAAQMD screening size for evaluating impacts related to ozone and particulate matter. Therefore, the project would not contribute substantially to existing or projected violations of those standards. Carbon monoxide emissions from traffic generated by the project would be the pollutant of greatest concern at the local level. Congested intersections with a large volume of traffic have the greatest potential to cause high-localized concentrations of carbon monoxide. Air pollutant monitoring data indicate that carbon monoxide levels have been at healthy levels (i.e., below State and federal standards) in the Bay Area since the early 1990s. As a result, the region has been designated as attainment for the standard. The highest measured level over any 8-hour averaging period during the last 3 years in the Bay Area is less than 3.0 parts per million (ppm), compared to the ambient air quality standard of 9.0 ppm. Intersections affected by the project would have traffic volumes less than the BAAQMD screening criteria and, thus, would not cause

a violation of an ambient air quality standard or have a considerable contribution to cumulative violations of these standards.[5]

Impact 4: Expose sensitive receptors to substantial pollutant concentrations? ***Less than significant with construction-period mitigation measures.***

Project impacts related to increased community risk can occur either by introducing a new sensitive receptor, such as a residential use, in proximity to an existing source of TACs or by introducing a new 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. Operation and testing of the project emergency back-up generator was evaluated for risk to nearby sensitive receptors. In addition, construction activity would generate dust and equipment exhaust on a temporary basis that could affect nearby sensitive receptors that include residences. Impacts associated with project construction TAC emissions were assessed. The project would introduce new sensitive receptors to the area that would be exposed to emissions from nearby roadways and stationary sources. These impacts upon the project were assessed.

Community Risk Impact Evaluation Methodology

Two types of community risk impacts associated with the project were evaluated: (1) the impact of TAC sources at or near the project site upon new project residences, and (2) the impact of construction activity on nearby residences. This community risk assessment models concentrations of $PM_{2.5,}$ DPM, and total organic gases (TOG), which are then used to evaluate potential cancer risk and non-cancer health hazards.

Cancer Risks

A health risk assessment for exposure to 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 CARB develop recommended methods for conducting health risk assessments. The most recent OEHHA risk assessment guidelines were published in February of 2015.[6] 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.[7] This health risk assessment used the recent 2015 OEHHA risk assessment guidelines and CARB guidance. While the OEHHA guidelines use substantially more conservative assumptions than the current BAAQMD guidelines, BAAQMD has not formally adopted

[5] For a land-use project type, the BAAQMD CEQA Air Quality Guidelines state that a proposed project would result in a less than significant impact to localized carbon monoxide concentrations if the project would not increase traffic at affected intersections with more than 44,000 vehicles per hour.

[6] 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.

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

recommended procedures for applying the newest OEHHA guidelines. BAAQMD is in the process of developing new guidance and has provided initial information on exposure parameter values they are proposing for use.[8] The OEHHA guidelines and newly recommended BAAQMD exposure parameters were used in this evaluation.

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), 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).

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

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

Where:

CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
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 = $C_{air} \times DBR \times A \times (EF/365) \times 10^{-6}$

Where:

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

[8] Email from Virginia Lau, BAAQMD to Bill Popenuck of Illingworth & Rodkin, Inc, dated November 15, 2015.

The health risk parameters used in this evaluation are summarized in Table 4.

Table 4. Community Risk Parameters Used for Cancer Risk Calculations

Parameter	*Exposure Type* / *Age Range*	Infant		Child	Adult
		3rd Trimester	0<2	2 < 16	16 - 30
DPM Cancer Potency Factor (mg/kg-day)$^{-1}$		1.10E+00	1.10E+00	1.10E+00	1.10E+00
Daily Breathing Rate (L/kg-day)*		361	1,090	572	261
Inhalation Absorption Factor		1	1	1	1
Averaging Time (years)		70	70	70	70
Exposure Duration (years)		0.25	2	14	14
Exposure Frequency (days/year)		350	350	350	350
Age Sensitivity Factor		10	10	3	1
Fraction of Time at Home		1.0	1.0	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 projects involving construction or for residential projects locating near roadways with substantial TAC emissions, the primary TAC of concern with non-cancer health effects is DPM. For DPM, the chronic inhalation REL is 5 $\mu g/m^3$.

While not a TAC, $PM_{2.5}$ 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 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 involving construction, $PM_{2.5}$ impacts should include those from construction equipment and vehicle exhaust in addition to fugitive dust impacts from construction activities. 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.

Project Operation

The project would include new sensitive receptors. Substantial sources of air pollution can adversely affect sensitive receptors proposed as part of new projects. A review of the area indicates that S. Market Street (SR-82) and Interstate 280 (I-280) are within 1,000 feet of the site and can adversely affect new residences. Both S. 1st Street and E. Williams Street have average

daily traffic (ADT) below 10,000 vehicles, which is the criterion for which BAAQMD recommends assessing local roadways for project impacts. Therefore, S. 1st Street and E. Williams Street are not analyzed further. A review of BAAQMD's *Stationary Source Screening Analysis Tool* shows several stationary sources of TAC emissions that could affect the project site.[9]

Refined Highway Community Risk Impacts – SR-82/S. Market Street

A refined analysis of the impacts of TAC and $PM_{2.5}$ is necessary to evaluate potential cancer risks and $PM_{2.5}$ concentrations from South Market Street. In the project area S. Market Street has 20,800 average daily trips (ADT), as reported by the California Department of Transportation (Caltrans).[10] A review of the Caltrans traffic information indicates that S. Market Street traffic includes about 3.7 percent trucks, of which 0.7 percent are considered heavy duty trucks and 3.0 percent are medium duty trucks.

Traffic Emissions Modeling

This analysis involved the development of DPM, organic TACs, and $PM_{2.5}$ emissions for traffic on S. Market Street using the CARB EMFAC2014 emission factor model and the traffic mix developed from Caltrans data. EMFAC2014 is the most recent version of the CARB motor vehicle emission factor model. DPM emissions are projected to decrease in the future and are reflected in the EMFAC2014 emissions data.

Residential occupation of the project was assumed to begin in 2018 or thereafter. In order to estimate TAC and $PM_{2.5}$ emissions over the 30-year exposure period used for calculating increased cancer risks to new residents from traffic on S. Market Street, the EMFAC2014 model was used to develop vehicle emission factors for the year 2020 using the calculated mix of cars and trucks on S. Market Street. Year 2020 emissions were conservatively assumed as being representative of future conditions over the time period that cancer risks are evaluated (30 years) since, as discussed above, overall vehicle emissions and, in particular, diesel truck emissions will decrease in the future. Default EMFAC2014 vehicle model fleet age distributions for Santa Clara County were assumed in calculating the emissions. Average daily traffic volumes truck percentages were based on the most recent Caltrans data for S. Market Street in the project area. Traffic volumes were assumed to increase 1 percent per year. Average hourly traffic distributions for Santa Clara County roadways were developed using the EMFAC model,[11] which were then applied to the average daily traffic volumes to obtain estimated hourly traffic volumes and emissions for S. Market Street. Traffic speeds on S. Market Street were assumed to be 30 mph for all hours of the day.

Emissions of TOGs were also calculated for 2020 using the EMFAC2014 model. These TOG

[9] See http://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/ceqa-tools , accessed December 16, 2015.
[10] California Department of Transportation. 2012. *2011 Traffic Volumes on California State Highways*
[11] The Burden output from EMFAC2007, CARB's previous version of the EMFAC model, was used for this since the current web-based version of EMFAC2011 does not include Burden type output with hour by hour traffic volume information.

emissions were then used in modeling the organic TACs (i.e., TACs associated with motor vehicle from TOG exhaust emissions and evaporative TOG emissions). TOG emissions from exhaust and for running evaporative loses from gasoline vehicles were calculated using EMFAC2014 default model values for Santa Clara County along with the traffic volumes and vehicle mixes for the S. Market Street. The hourly traffic distributions and emission rates used in the analysis are shown in *Attachment 2*.

Dispersion Modeling

Dispersion modeling of DPM and $PM_{2.5}$ emissions was conducted using the CAL3QHCR model, which is recommended by the BAAQMD for this type of analysis.[12] A five-year data set (1991-1995) of hourly meteorological data from the San Jose Airport, prepared by the BAAQMD, was used in the modeling. Other inputs to the model included road geometry, hourly traffic volumes, emission factors, and on-site project receptor locations. North- and south-bound traffic on S. Market Street within about 1,000 feet of the project site was evaluated with the model.

The modeling used receptors placed at proposed residential locations of the project. The third to 25^{th} floor levels of the project buildings would have residential units. Roadway DPM and $PM_{2.5}$ concentrations were calculated for receptors located on the third through fifth floors. Modeling of higher floor levels was not conducted since, as discussed below, cancer risks for residences on the third floor and above would be below the significance thresholds for cancer risk. Figure 1 shows the roadway links and receptor locations used in the modeling.

Computed Cancer Risk

Increased cancer risks for new residents at the project site from traffic on S. Market Street were calculated using modeled TAC concentrations and the methods and exposure parameters described previously. The maximum increased cancer risk from traffic on S. Market Street was computed as 1.8 in one million at the project maximally exposed individual (MEI). This was modeled at a residential unit in the southwest corner of the building on the third floor, as shown on Figure 1. Cancer risks from S. Market Street at other residential locations and floor levels would be lower than the maximum risk. The cancer risks at the project site are below the BAAQMD's threshold of greater than 10 in one million excess cancer cases per million and would be considered a *less-than-significant impact*. Emission rates and risk modeling calculations are contained in *Attachment 2*.

Non-Cancer Health Effects

For non-cancer health effects from DPM a chronic HI of 0.0004 was computed based on an average DPM concentration of 0.002 $\mu g/m^3$ and a chronic inhalation REL for DPM is 5 $\mu g/m^3$. This HI is well below the BAAQMD HI threshold of greater than 1.0. This would be considered a *less than significant impact.*

[12] BAAQMD, 2012. *Recommended Methods for Screening and Modeling Local Risks and Hazards*. May.

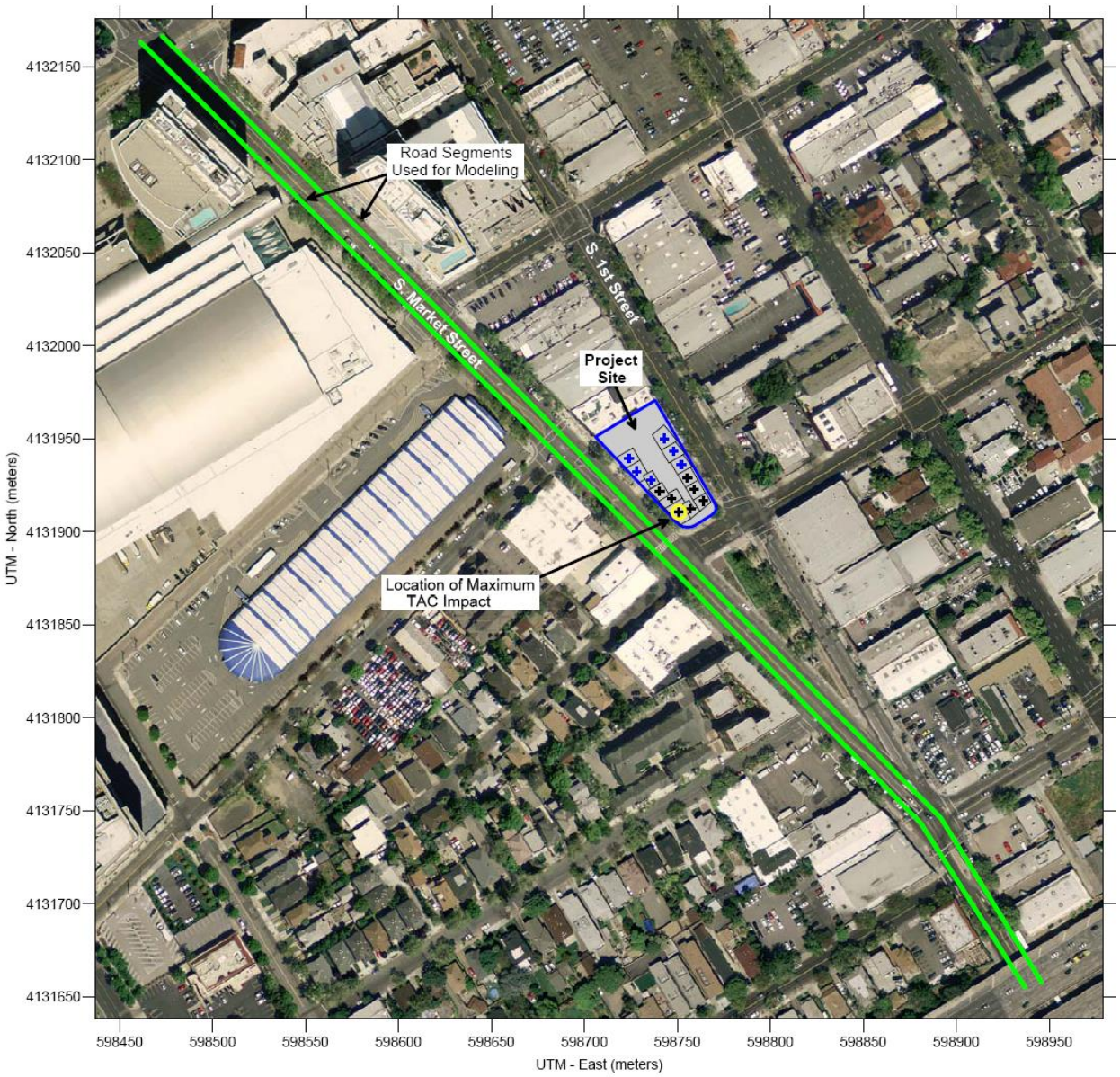
$PM_{2.5}$ Concentrations from Modeled Roadways

In addition to evaluating the health risks from TACs, potential impacts from $PM_{2.5}$ emissions for vehicles traveling on S. Market Street were evaluated. The same basic modeling approach that was used for assessing TAC impacts was used in the modeling of $PM_{2.5}$ concentrations. $PM_{2.5}$ 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 were included in these emissions. The assessment involved, first, calculating $PM_{2.5}$ emission rates from traffic traveling on the highway. These emissions were calculated using the EMFAC2014 model for the 2020 traffic volumes and were calculated in the same manner as discussed earlier for the TAC modeling. $PM_{2.5}$ re-entrained dust emissions from vehicles traffic were calculated using CARB emission calculation procedures[13]. Then, dispersion modeling using $PM_{2.5}$ emission factors and traffic volumes was also conducted using the CAL3QHCR model in the same manner as the TAC modeling. The model provides estimated annual $PM_{2.5}$ concentrations.

The model predicted the maximum annual $PM_{2.5}$ concentration from S. Market Street traffic of 0.2 $\mu g/m^3$, which would occur at the same residential receptor that had the maximum cancer risk in the southwest corner of the third floor (see Figure 1). The maximum annual $PM_{2.5}$ concentration is below the $PM_{2.5}$ threshold of greater than 0.3 $\mu g/m^3$ and would be considered a *less-than-significant impact.*

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

Figure 1. Project Site, On-Site Sensitive Receptors, Roadway Segments Modeled, and Receptor with Maximum Cancer Risk and Annual $PM_{2.5}$ Concentration Depicted



I-280 Risk and Hazards

BAAQMD provides a Google Earth *Highway Screening Analysis Tool* that can be used to identify screening level impacts from highways. This tool was used to identify the screening community risk levels from I-280. I-280 traffic impacts were identified using Link 539 for a 6-foot-high exposure at the site (i.e., ground level exposure) at a distance of approximately 950 feet north. Screening level impacts identified using this tool were 8.7 in one million cancer risk,[14] $PM_{2.5}$ concentration of 0.1 $\mu g/m^3$ and HI of 0.01, all of which would be below BAAQMD thresholds of significance.

Stationary Sources

Permitted stationary sources of air pollution near the project site were identified using BAAQMD's *Stationary Source Screening Analysis Tool*. This mapping tool uses Google Earth to identify the location of stationary sources and their estimated risk and hazard impacts. The BAAQMD tool identified four sources that could affect the project site:

- Plant 15125 is an emergency back-up generator located at 301 S. Market Street, operated by the San Jose Marriott Hotel about 700 feet northwest of the project site. At BAAQMD's direction, risk and $PM_{2.5}$ concentrations from the diesel generator were adjusted based on BAAQMD's *Distance Adjustment Multiplier Tool for Diesel Internal Combustion (IC) Engines*. According to the BAAQMD screening data, this facility would result in an excess cancer risk of 1.7 per million,[14] $PM_{2.5}$ concentration of 0.0 $\mu g/m^3$ and HI of <0.01, all of which would be below BAAQMD thresholds of significance.
- Plant 2060, operated by the Department of Convention & Cultural Affairs is located about 350 feet northwest of the project site. At BAAQMD's direction, risk and $PM_{2.5}$ concentrations from the source were adjusted based on BAAQMD's *Distance Adjustment Multiplier Tool for Diesel Internal Combustion (IC) Engines*. According to the BAAQMD screening data, this facility would result in an excess cancer risk of 1.1 per million,[14] $PM_{2.5}$ concentration of 0.2 $\mu g/m^3$ and HI of <0.01, all of which would be below BAAQMD thresholds of significance.
- Plant 17018 is an emergency back-up generator located at 435 S. Market Street, operated by the San Jose Redevelopment Agency about 150 feet west of the project site. At BAAQMD's direction, risk and $PM_{2.5}$ concentrations from the diesel generator were adjusted based on BAAQMD's *Distance Adjustment Multiplier Tool for Diesel Internal Combustion (IC) Engines*. According to the BAAQMD screening data, this facility would result in an excess cancer risk of 0.5 per million,[14] $PM_{2.5}$ concentration of 0.0 $\mu g/m^3$ and HI of 0.00, all of which would be below BAAQMD thresholds of significance.
- Plant 15663, operated by Chevron USA c/o SAIC is located at 598 S. 1st street about 500 feet southeast of the project site. According to the BAAQMD screening data, this facility would result in an excess cancer risk of 0.2 per million,[14] $PM_{2.5}$ concentration of 0.0 $\mu g/m^3$ and HI of 0.00, all of which would be below BAAQMD thresholds of significance.

[14] Includes adjustment factor of 1.3744 to account for latest OEHHA methodology per correspondence with Alison Kirk, BAAQMD, November 23, 2015.

Operational Impacts from Project Generator

The only source of TACs identified with build-out of the project is assumed to be one emergency back-up. The maximum back-up power needs envisioned for this type of project would not be larger than 600 kW, provided by an approximate 805 horsepower engine, based on similar projects. It is assumed for this assessment that the generator would be driven by a diesel-fueled engine.

The emergency back-up generator would be used for backup power in emergency conditions. The generator will be operated for testing and maintenance purposes, with a maximum of 50 hours per year of non-emergency operation under normal conditions allowed by BAAQMD. During testing periods the engine would typically be run for less than one hour. The engine would be required to meet CARB and U.S. EPA emission standards. The engine will consume commercially available California low-sulfur diesel fuel.

The generator would require permits from the BAAQMD, since it will be equipped with an engine larger than 50 horsepower. As part of the BAAQMD permit requirements, an assessment that shows less-than-significant health risks from diesel particulate matter exposure would be required. The risk assessment, prepared by BAAQMD, would have to show that cancer risks are less than 10 per million and that the project includes Best Available Toxics Control Technology, which would set limits for diesel particulate matter emissions. Sources of air pollutant emissions complying with all applicable BAAQMD regulations generally will not be considered to have a significant air quality community risk impact.

Emissions from the testing and maintenance of the generator were calculated using CARB's OFFROAD emissions model for large compression-ignited engines above 25 horsepower. Results of generator modeling indicate average daily emissions of 0.0019 pounds of DPM per day. Risk and $PM_{2.5}$ concentrations from a diesel generator of this size and average daily emissions were then calculated based on BAAQMD's *Risk and Hazards Emissions Screening Calculator (Beta Version)*. Results indicate that the project generator would result in an excess cancer risk of 3.4 per million,[14] $PM_{2.5}$ concentration of 0.0 $\mu g/m^3$ and HI of <0.01, all of which would be below BAAQMD thresholds of significance both on-site affecting project residences and at nearby sensitive receptors. *Therefore, this impact would be considered less than significant*. *Attachment 3* includes emission factors and risk modeling calculations for the project emergency back-up generator.

Summary of Combined Community Risk

As discussed above, the project site is affected by multiple sources of TACs. Table 5 shows the cancer risk associated with each source affecting the project site. The sum of impacts from combined sources (i.e., sources within 1,000 feet of the project) would be below the BAAQMD thresholds of significance and, therefore, the combined impact from operational community risk at the project site would be considered *less-than-significant*.

Table 5. Combined Community Risk Levels at Project Site

Source	30-Year Adult Cancer Risk (per million)	Annual $PM_{2.5}$ ($\mu g/m^3$)	Acute or Chronic Hazard Index
S. Market Street/SR-82	1.8	0.2	<0.01
I-280	8.7	0.1	0.01
San Jose Marriott Hotel Plant 15125	1.7	0.0	<0.01
Department of Convention & Cultural Affairs Plant 2060	1.1	0.2	<0.01
San Jose Redevelopment Agency Plant 17018	0.5	0.0	0.00
Chevron USA c/o SAIC Plant 15663	0.2	0.0	0.00
Project Generator	3.4	0.0	<0.01
Total	17.4	0.5	<0.05
BAAQMD Cumulative Source Threshold	*100.0*	*0.8*	*10.0*
Significant?	***No***	***No***	***No***

Project Construction Activity

Construction equipment and associated heavy-duty truck traffic generates diesel exhaust, which is a known TAC. These exhaust air pollutant emissions would not be considered to contribute substantially to existing or projected air quality violations. Construction exhaust emissions may still pose community risks for sensitive receptors such as nearby residents. 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. A community risk assessment of the project construction activities was conducted that evaluated potential health effects of sensitive receptors at these nearby residences from construction emissions of DPM and $PM_{2.5}$.[15] The closest sensitive receptors to the project site are residences that are between about 230 and 250 feet southwest of the site across South Market Street (see Figure 2). Emissions and dispersion modeling was conducted to predict the off-site DPM concentrations resulting from project construction, so that lifetime cancer risks and non-cancer health effects could be evaluated.

Construction Period Emissions

Construction activity is anticipated to include demolition, grading and site preparation, trenching, building construction, and paving. Construction period emissions were modeled using CalEEMod, as described above. For the purpose of predicting risk levels at or near the site, the

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

CalEEMod modeling included emissions from truck and worker travel, assumed to occur over a distance of 1 mile on or near the site.

The CalEEMod model provided total annual $PM_{2.5}$ exhaust emissions (assumed to be DPM) for the off-road construction equipment and for exhaust emissions from on-road vehicles, with total emissions from all construction stages of 0.120 tons (240 pounds). The on-road emissions are a result of haul truck travel during demolition and grading activities, worker travel, and vendor deliveries during construction. It was assumed that these emissions from on-road vehicles traveling at or near the site would occur at the construction site. Fugitive $PM_{2.5}$ dust emissions were calculated by CalEEMod as 0.022 tons (44 pounds) for the overall construction period.

Dispersion Modeling

The U.S. EPA AERMOD dispersion model was used to predict concentrations of DPM and $PM_{2.5}$ concentrations at sensitive receptors (residences) in the vicinity of the project construction area. The AERMOD dispersion model is a BAAQMD-recommended model for use in modeling analysis of these types of emission activities for CEQA projects.[16] The AERMOD modeling utilized two area sources to represent the on-site construction emissions, one for exhaust emissions and one for fugitive dust emissions. To represent the construction equipment exhaust emissions, an emission release height of 6 meters (19.7 feet) was used for the area source. 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 source. Emissions from the construction equipment and on-road vehicle travel were distributed throughout the modeled area sources. Construction emissions were modeled as occurring daily between 7 a.m. to 4 p.m., when the majority of construction activity would occur. Figure 2 shows the project site and nearby sensitive receptor (residences) locations where health impacts were evaluated.

The modeling used a 5-year meteorological data set (2006-2010) from the San Jose Airport prepared for use with the AERMOD model by the BAAQMD. Annual DPM and $PM_{2.5}$ concentrations from construction activities during the 2016-2017 period were calculated using the model. DPM and $PM_{2.5}$ concentrations were calculated at nearby sensitive receptor locations. Receptor heights of 1.5 meters (4.9 feet) and 4.5 meters (14.8 feet) were used to represent the breathing heights of residents on first and second floor levels of nearby residences and apartments.

The maximum-modeled DPM and $PM_{2.5}$ concentrations occurred in the residential area along S. Market Street southeast of the project site. The location where the maximum concentrations and health risks occurred is shown in Figure 2.

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

Predicted Cancer Risk and Hazards

Increased cancer risks were calculated using the maximum modeled annual DPM concentrations and cancer risk assessment methods described previously. Due to the relatively short duration of project construction activities infant exposures were assumed in calculating the maximum cancer risk for residential exposures. Because an infant (0 to 2 years of age) breathing rate is greater than the breathing rate for the 3rd trimester the contribution to total cancer risk from an infant exposure is greater than if the initial exposure for the 3rd trimester is assumed. Infant exposures were assumed to occur at residential receptors throughout the entire construction period.

Results of this assessment indicate that the maximum increased residential cancer risk would be 18.8 in one million for a child exposure and 0.3 in one million for an adult exposure. The location of the receptor with the maximum increased cancer risk is shown in Figure 2. While the residential adult cancer risk is below the BAAQMD's threshold of greater than 10 in one million excess cancer cases per million, the increased cancer risk for a residential child exposure is greater than the significance threshold and would be considered a *significant impact*.

Non-cancer hazards for DPM would be well below BAAQMD threshold at all locations, with the maximum chronic HI computed at 0.01. This HI is much lower than the BAAQMD significance threshold of greater than 1.0 and would be considered a *less-than-significant impact*.

The maximum modeled annual $PM_{2.5}$ concentration, including fugitive dust and DPM, from construction activities at an off-site residential receptor was 0.1 $\mu g/m^3$. This $PM_{2.5}$ concentration is below the BAAQMD significance threshold of greater than 0.3 $\mu g/m^3$ used to judge the significance of health impacts from $PM_{2.5}$. This would be considered a *less-than-significant impact*.

The project would have a *significant impact* with respect to community risk caused by construction activities. Implementation of *Mitigation Measures AQ-1 and AQ-2* would reduce this impact to a level of less than significant.

Mitigation Measure AQ-2: ***Selection of equipment during construction to minimize emissions. Such equipment selection would include the following:***

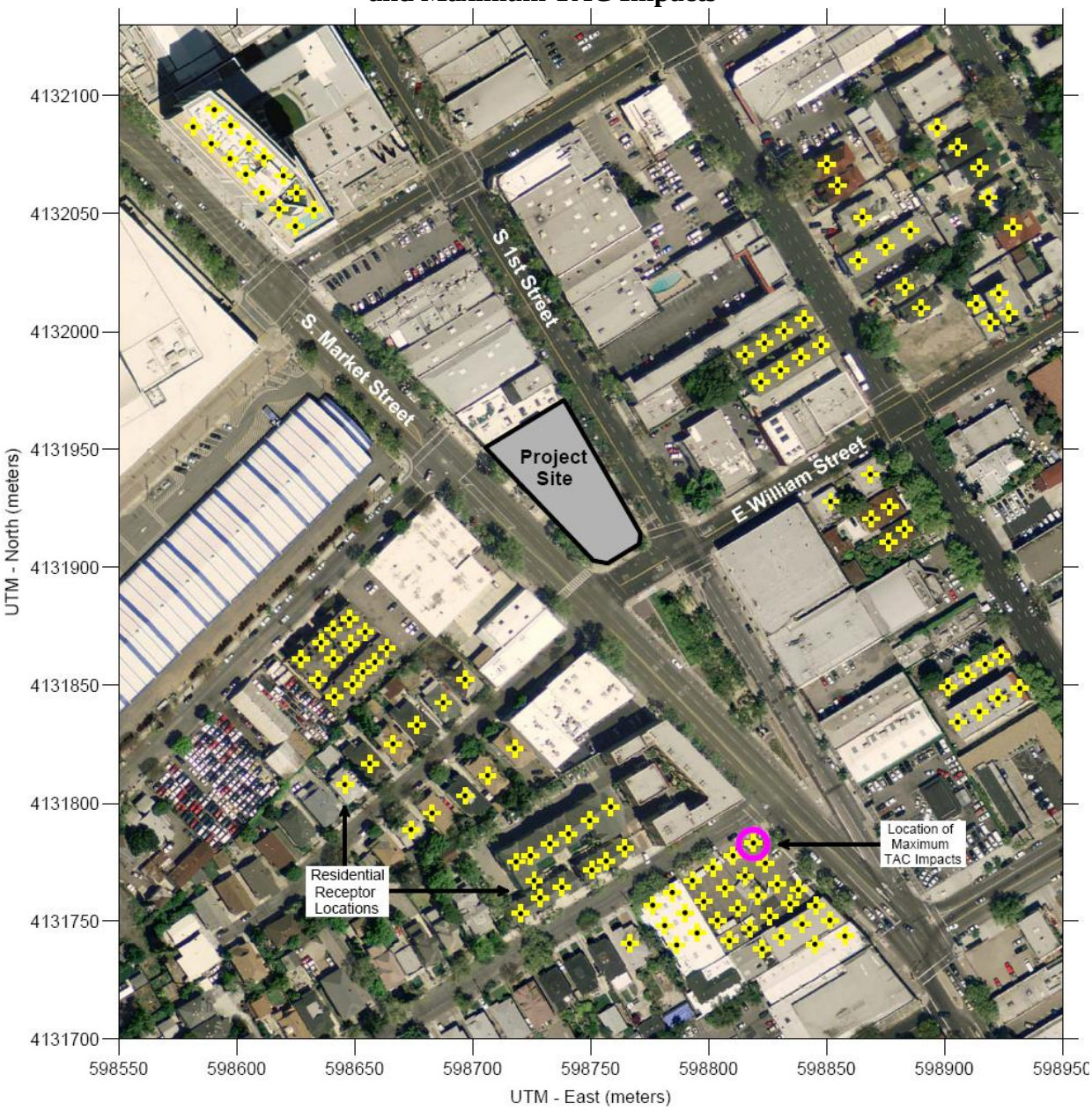
1. All diesel-powered off-road equipment larger than 50 horsepower and operating on the site for more than two days continuously shall, at a minimum, meet U.S. EPA particulate matter emissions standards for Tier 2 engines or equivalent; and
2. All diesel-powered portable equipment (i.e., aerial lifts, air compressors, concrete saws, and forklifts) operating on the site for more than two days shall meet U.S. EPA particulate matter emissions standards for Tier 4 engines or equivalent.

Note that the construction contractor could use other measures to minimize construction period DPM emissions to reduce the predicted cancer risk below the thresholds. Such measures may be the use of alternative powered equipment (e.g., LPG-powered lifts), alternative fuels (e.g., biofuels), added exhaust devices, or a combination of measures, provided that these measures are

approved by the City and demonstrated to reduce community risk impacts to less than significant.

Implementation of *Mitigation Measure AQ-1* is considered to reduce exhaust emissions by 5 percent and fugitive dust emissions by over 50 percent. Implementation of *Mitigation Measure AQ-2* would further reduce on-site diesel exhaust emissions. With mitigation, the computed maximum increased residential child cancer risk for construction would be 6.0 in one million. The cancer risk would be below the BAAQMD thresholds of greater than 10 per one million for cancer risk. Therefore, *after implementation of these recommended measures, the project would have a less-than-significant impact with respect to community risk caused by construction activities.*

Figure 2. Project Construction Site, Locations of Off-Site Sensitive Receptors and Maximum TAC Impacts



Combined Construction Risk Assessment

The combined risk was computed by adding the effects of construction activities with nearby TAC sources. Construction risks from the project are based on those impacts described above. Table 6 shows the community risk impacts associated with each source. The maximum combined cancer risk from unmitigated construction and nearby TAC sources would be 39.7 in one million. The maximum annual $PM_{2.5}$ concentration would be 0.4 $\mu g/m^3$. For non-cancer health effects due to chronic exposure to DPM, the HI would be less than 0.05. These combined risk levels were found to be below the significance levels.

Table 6. Combined Construction Source Cancer Risks, $PM_{2.5}$ Concentrations, and Hazard Index

Source	Cancer Risk (per million)	Annual $PM_{2.5}$ ($\mu g/m^3$)	Acute or Chronic Hazard Index
Proposed Project Construction	18.8	0.1	0.01
S. Market Street/SR-82	1.8	0.2	<0.01
Interstate 280[1]	18.3	0.1	0.02
San Jose Marriott Hotel Plant 15125[2]	--	--	--
Department of Convention & Cultural Affairs Plant 2060[2]	--	--	--
San Jose Redevelopment Agency Plant 17018[3]	0.1	0.0	0.00
Chevron USA c/o SAIC Plant 15663	0.2	0.0	0.00
Project Generator[4]	0.5	0.0	<0.01
Total	39.7	0.4	<0.05
BAAQMD Cumulative Source Threshold	*100.0*	*0.8*	*10.0*
Significant?	***No***	***No***	***No***

Note: [1]Estimated using BAAQMD's Highway Screening Analysis Tool and adjusted for 2015 OEHHA
[2]Source is beyond 1,000 feet from construction MEI
[3]Estimated using BAAQMD's Stationary Source Screening Analysis Tool and distance adjustment, and adjusted for 2015 OEHHA
[4]Estimated using BAAQMD's distance adjustment Multiplier Tool for Diesel Internal Combustion (IC) Engines and adjusted for 2015 OEHHA

Impact 6: 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 within the project vicinity, energy and water usage, and solid waste disposal. Emissions for the proposed project are discussed below and were analyzed using the methodology recommended in the BAAQMD CEQA Air Quality Guidelines.[17]

[17] BAAQMD, 2011. *Op cit.*

CalEEMod Modeling

CalEEMod was also used to predict GHG emissions from operation of the site assuming full build-out of the project, as described above. The project land use types and size and other project-specific information were input to the model. The use of this model for evaluating emissions from land use projects is recommended by the BAAQMD. CalEEMod provides emissions for transportation, areas sources, electricity consumption, natural gas combustion, electricity usage associated with water usage and wastewater discharge, and solid waste land filling and transport. CalEEMod output worksheets are included in *Attachment 1*.

Service Population (Per Capita Efficiency Rate)

The project per capita efficiency rate is based on the number of future residences and employees. The future number of residences was estimated at 957 based on the latest US Census data,[18] and the future number of employees was estimated at 12 based on 2.5 employees per 1,000 sf of retail, for a total service population of 969. A separate CalEEMod run was conducted to compute total GHG emissions from the project in order to evaluate the per capita efficiency rate. This run did not take the existing trip credit used to compute net project emissions for criteria pollutants above.

Construction Emissions

GHG emissions associated with construction were computed to be up to 516 MT of CO_2e per year in 2017. These are the emissions from on-site operation of construction equipment, vendor and hauling truck trips, and worker trips. Neither the City nor BAAQMD have an adopted threshold of significance for construction-related GHG emissions, though BAAQMD recommends quantifying emissions and disclosing that GHG emissions would occur during construction. BAAQMD also encourages the incorporation of best management practices to reduce GHG emissions during construction where feasible and applicable. Best management practices assumed to be incorporated into construction of the proposed project include, but are not limited to: using local building materials of at least 10 percent and recycling or reusing at least 50 percent of construction waste or demolition materials.

Operational Emissions

The CalEEMod model, along with the project vehicle trip generation rates, was used to predict daily emissions associated with operation of the fully-developed site under the proposed project. In 2018, as shown in Table 7, annual emissions resulting from operation of the proposed project are predicted to be 2.1 MT of CO_2e/capita. These emissions would not exceed the BAAQMD threshold of 4.6 MT of CO_2e/yr/capita and, therefore, *this would be considered a less-than-significant impact*.

[18] United States Census Bureau, 2015. *San Jose(city), California QuickFacts, Persons per Household (2009-2013).* Available online: http://quickfacts.census.gov/qfd/states/06/0668000.html. Accessed: December 16, 2015.

Table 7. Annual Project GHG Emissions (CO_2e) in Metric Tons

Source Category	2018 Project Emissions
Area	14
Energy Consumption	412
Mobile	1,509
Solid Waste Generation	67
Water Usage	56
Total	2,058
Per Capita Efficiency Rate	2.1
BAAQMD Threshold	4.6 MT CO_2e/year/capita

Note: due to rounding, some values may not total exactly.

Project Generator

As discussed above, the project would include one emergency diesel generator, assumed to be up to 600 kW/805 hp. The generator would be tested routinely, up to 50 hours per year. Emissions from the testing and maintenance of the generator was calculated using CARB's OFFROAD emissions model for large compression-ignited engines above 25 hp and included the CARB Low Carbon Fuel Standard (LCFS) rules. Results of generator modeling indicate annual CO_2 emissions of 11 MT. The BAAQMD threshold for stationary sources requiring permits is 10,000 annual MT. Therefore, project stationary GHG emissions would be well below this threshold. Details of the generator modeling are included in *Attachment 3*.

Impact 7: Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases? ***Less than significant.***

The project would be subject to new requirements under rule making developed at the State and local level regarding greenhouse gas emissions and would be subject to local policies that may affect emissions of greenhouse gases.

Attachment 1: Construction Schedule, CalEEMod Outputs, and Risk Modeling

Project Name:		470 S. Market St, San Jose						
Qty	Description	HP	Load Factor	Hours/day	Total Work Days	Avg. Hours per day	Annual Hours	Comments
	Demolition	**Start Date:**	**1/1/2016**	**Total phase:**	**20**			**Overall Import/Export Volumes**
		End Date:	**1/28/2016**					
1	Concrete/Industrial Saws	81	0.73	8	5	2.0	40	**Demolition Volume**
1	Excavators	162	0.38	8	20	8.0	160	Square footage of buildings to be demolished
1	Rubber-Tired Dozers	255	0.4	8	20	8.0	160	(*or* total tons to be hauled)
								15,000 square feet *or*
								? Hauling volume (tons)
	Site Preperation	**Start Date:**	**1/29/2016**	**Total phase:**	**5**			Any pavement demolished and hauled? 150 **tons**
		End Date:	**2/4/2016**					
1	Rubber Tired Dozers	255	0.4	8	5	8.0	40	
2	Tractors/Loaders/Backhoes	97	0.37	8	5	8.0	80	
	Grading / Excavation	**Start Date:**	**2/5/2016**	**Total phase:**	**65**			
		End Date:	**5/5/2016**					**Soil Hauling Volume**
2	Excavators	162	0.38	8	60	7.4	960	Export volume = **26,900** cubic yards?
1	Tractors/Loaders/Backhoes	97	0.37	8	60	7.4	480	Import volume = **0** cubic yards?
	Trenching	**Start Date:**	**5/6/2016**	**Total phase:**	**11**			
		End Date:	**5/20/2016**					
1	Tractor/Loader/Backhoe	97	0.37	8	10	7.3	80	
1	Excavators	162	0.38	8	10	7.3	80	
	Building - Exterior	**Start Date:**	**7/29/2016**	**Total phase:**	**309**			**Cement Trucks? 2,730 Total Round-Trips**
		End Date:	**10/4/2017**					
1	Cranes	226	0.29	10	309	10.0	3090	Electric? (Y/N) _Y__ Otherwise assumed diesel
1	Forklifts	89	0.2	6	309	6.0	1854	Liquid Propane (LPG)? (Y/N) __N_ Otherwise Assumed diesel
0	Generator Sets	84	0.74	8	0	0.0	0	Or temporary line power? (Y/N) _Y__
1	Welders	46	0.45	6	309	6.0	1854	
Building - Interior/Architectural Coating		**Start Date:**	**2/10/2017**	**Total phase:**	**180**			
		End Date:	**10/19/2017**					
3	Air Compressors	78	0.48	6	180	6.0	3240	
2	Aerial Lift	62	0.31	8	180	8.0	2880	
	Paving	**Start Date:**	**8/11/2017**	**Total phase:**	**10**			
		Start Date:	**8/24/2017**					
1	Pavers	125	0.42	8	3	2.4	24	**Asphalt? __150_ cubic yards or ____ round trips?**
1	Paving Equipment	130	0.36	6	3	1.8	18	
1	Rollers	80	0.38	6	3	1.8	18	

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1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Apartments High Rise	308.00	Dwelling Unit	0.50	308,000.00	881
Strip Mall	5.13	1000sqft	0.00	5,135.00	0
Enclosed Parking with Elevator	256.00	Space	0.00	102,400.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	4			**Operational Year**	2018
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	429.64	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Using most recent, verified PG&E CO2 factor

Land Use - Lot acreage from PD

Construction Phase - Anticipated schedule from project applicant

Off-road Equipment - Proposed equipment list provided by project applicant

Off-road Equipment - Proposed equipment list provided by project applicant

Off-road Equipment - Proposed equipment list provided by project applicant

Off-road Equipment - Proposed equipment list provided by project applicant

Off-road Equipment - Proposed equipment list provided by project applicant. Electric crane, temporary line power.

Off-road Equipment - Proposed equipment list provided by project applicant

Off-road Equipment - Proposed equipment list provided by project applicant

Grading - 26,900 cy export

Demolition - 15,000 sf building demo

Trips and VMT - Demo: 68 + (150 tons pavement @ 20tons/truck - 16 trips) = 84. Bldg: 5,460 trips. Paving: 150 cy @ 16cy/truck = 20 trips. Vendor trip length for cement and asphalt trucks.

Vehicle Trips - Trip rates from traffic consultant, adjst. for MU, transit and existing trip credit.

Woodstoves - No woodstoves, possible wood fireplaces.

Energy Use - 2013 Title 24 standards 25% more energy-efficient for residential and 30% for non-res than 2008 standards.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	5.00	180.00
tblConstructionPhase	NumDays	100.00	309.00
tblConstructionPhase	NumDays	10.00	20.00
tblConstructionPhase	NumDays	2.00	65.00
tblConstructionPhase	NumDays	5.00	10.00
tblConstructionPhase	NumDays	1.00	5.00
tblConstructionPhase	PhaseEndDate	6/13/2018	10/19/2017
tblConstructionPhase	PhaseEndDate	7/27/2017	10/4/2017
tblConstructionPhase	PhaseEndDate	11/2/2017	8/24/2017
tblConstructionPhase	PhaseStartDate	10/5/2017	2/10/2017
tblConstructionPhase	PhaseStartDate	5/21/2016	7/29/2016
tblConstructionPhase	PhaseStartDate	10/20/2017	8/11/2017
tblEnergyUse	LightingElect	741.44	556.08
tblEnergyUse	LightingElect	5.64	3.95
tblEnergyUse	LightingElect	2.63	1.84
tblEnergyUse	T24E	226.57	169.93
tblEnergyUse	T24E	3.37	2.36
tblEnergyUse	T24E	3.92	2.74
tblEnergyUse	T24NG	6,391.64	4,793.73
tblEnergyUse	T24NG	2.49	1.74
tblFireplaces	FireplaceWoodMass	92.40	0.00

tblFireplaces	NumberGas	169.40	212.52
tblFireplaces	NumberWood	43.12	0.00
tblGrading	AcresOfGrading	0.00	0.50
tblGrading	MaterialExported	0.00	26,900.00
tblLandUse	LandUseSquareFeet	5,130.00	5,135.00
tblLandUse	LotAcreage	4.97	0.50
tblLandUse	LotAcreage	0.12	0.00
tblLandUse	LotAcreage	2.30	0.00
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.40	0.40
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.31	0.31
tblOffRoadEquipment	LoadFactor	0.36	0.36
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Rubber Tired Dozers
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Welders
tblOffRoadEquipment	OffRoadEquipmentType		Aerial Lifts
tblOffRoadEquipment	OffRoadEquipmentType		Paving Equipment
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	7.00	2.40
tblOffRoadEquipment	UsageHours	7.00	1.80
tblOffRoadEquipment	UsageHours	1.00	8.00
tblOffRoadEquipment	UsageHours	6.00	7.40
tblProjectCharacteristics	CO2IntensityFactor	641.35	429.64
tblProjectCharacteristics	OperationalYear	2014	2018
tblTripsAndVMT	HaulingTripLength	20.00	7.30
tblTripsAndVMT	HaulingTripLength	20.00	7.30
tblTripsAndVMT	HaulingTripNumber	68.00	84.00
tblTripsAndVMT	HaulingTripNumber	0.00	5,460.00
tblTripsAndVMT	HaulingTripNumber	0.00	20.00
tblVehicleTrips	ST_TR	7.16	4.36
tblVehicleTrips	ST_TR	42.04	29.02
tblVehicleTrips	SU_TR	6.07	4.36
tblVehicleTrips	SU_TR	20.43	29.02
tblVehicleTrips	WD_TR	6.59	4.36
tblVehicleTrips	WD_TR	44.32	29.02
tblWoodstoves	NumberCatalytic	1.54	0.00
tblWoodstoves	NumberNoncatalytic	1.54	0.00
tblWoodstoves	WoodstoveDayYear	10.82	0.00
tblWoodstoves	WoodstoveWoodMass	954.80	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.2347	1.8022	2.3733	4.6700e-003	0.2237	0.0616	0.2853	0.0632	0.0572	0.1204	0.0000	401.4372	401.4372	0.0300	0.0000	402.0667
2017	3.0597	1.8033	3.2960	6.4000e-003	0.3316	0.0842	0.4158	0.0889	0.0820	0.1708	0.0000	514.7834	514.7834	0.0357	0.0000	515.5338
Total	**3.2944**	**3.6056**	**5.6693**	**0.0111**	**0.5553**	**0.1458**	**0.7011**	**0.1521**	**0.1392**	**0.2913**	**0.0000**	**916.2205**	**916.2205**	**0.0657**	**0.0000**	**917.6006**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.9680	0.0268	2.3056	1.2000e-004		0.0133	0.0133		0.0133	0.0133	0.0000	13.9573	13.9573	3.9100e-003	1.9000e-004	14.0975
Energy	0.0109	0.0931	0.0398	5.9000e-004		7.5300e-003	7.5300e-003		7.5300e-003	7.5300e-003	0.0000	409.1361	409.1361	0.0224	6.1800e-003	411.5238
Mobile	0.7702	1.6027	7.4000	0.0166	1.1977	0.0215	1.2191	0.3202	0.0198	0.3400	0.0000	1,233.1882	1,233.1882	0.0487	0.0000	1,234.2111
Waste						0.0000	0.0000		0.0000	0.0000	29.8539	0.0000	29.8539	1.7643	0.0000	66.9045
Water						0.0000	0.0000		0.0000	0.0000	6.4870	30.3499	36.8370	0.6683	0.0162	55.8803
Total	**2.7491**	**1.7226**	**9.7454**	**0.0173**	**1.1977**	**0.0423**	**1.2400**	**0.3202**	**0.0406**	**0.3608**	**36.3409**	**1,686.6316**	**1,722.9725**	**2.5077**	**0.0225**	**1,782.6171**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2016	1/28/2016	5	20	
2	Site Preparation	Site Preparation	1/29/2016	2/4/2016	5	5	
3	Grading	Grading	2/5/2016	5/5/2016	5	65	
4	Trenching	Trenching	5/6/2016	5/20/2016	5	11	
5	Building Construction	Building Construction	7/29/2016	10/4/2017	5	309	
6	Architectural Coating	Architectural Coating	2/10/2017	10/19/2017	5	180	
7	Paving	Paving	8/11/2017	8/24/2017	5	10	

Acres of Grading (Site Preparation Phase): 0.5

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 623,700; Residential Outdoor: 207,900; Non-Residential Indoor: 161,303; Non-Residential Outdoor: 53,768

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	3	6.00	78	0.48
Paving	Cement and Mortar Mixers	0	6.00	9	0.56
Demolition	Concrete/Industrial Saws	1	2.00	81	0.73
Grading	Concrete/Industrial Saws	0	8.00	81	0.73
Building Construction	Cranes	0	4.00	226	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Site Preparation	Graders	0	8.00	174	0.41
Paving	Pavers	1	2.40	125	0.42
Paving	Rollers	1	1.80	80	0.38
Demolition	Rubber Tired Dozers	1	8.00	255	0.40
Grading	Rubber Tired Dozers	0	1.00	255	0.40
Building Construction	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Demolition	Tractors/Loaders/Backhoes	0	6.00	97	0.37

Grading	Tractors/Loaders/Backhoes	1	7.40	97	0.37
Paving	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Demolition	Excavators	1	8.00	162	0.38
Site Preparation	Rubber Tired Dozers	1	8.00	255	0.40
Grading	Excavators	2	7.40	162	0.38
Trenching	Tractors/Loaders/Backhoes	1	7.30	97	0.37
Trenching	Excavators	1	7.30	162	0.38
Building Construction	Welders	1	6.00	46	0.45
Architectural Coating	Aerial Lifts	2	8.00	62	0.31
Paving	Paving Equipment	1	1.80	130	0.36

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	3	8.00	0.00	84.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	8.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	0.00	3,363.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	2	266.00	51.00	5,460.00	12.40	7.30	7.30	LD_Mix	HDT_Mix	HHDT
Paving	3	8.00	0.00	20.00	12.40	7.30	7.30	LD_Mix	HDT_Mix	HHDT
Architectural Coating	5	53.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	2	5.00	0.00	0.00	12.40	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Fugitive Dust					7.3800e-003	0.0000	7.3800e-003	1.1200e-003	0.0000	1.1200e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0179	0.1948	0.1487	1.6000e-004		9.5100e-003	9.5100e-003		8.8200e-003	8.8200e-003	0.0000	14.7351	14.7351	4.1700e-003	0.0000	14.8227
Total	**0.0179**	**0.1948**	**0.1487**	**1.6000e-004**	**7.3800e-003**	**9.5100e-003**	**0.0169**	**1.1200e-003**	**8.8200e-003**	**9.9400e-003**	**0.0000**	**14.7351**	**14.7351**	**4.1700e-003**	**0.0000**	**14.8227**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	9.2000e-004	0.0125	9.8300e-003	3.0000e-005	7.1000e-004	1.6000e-004	8.7000e-004	1.9000e-004	1.5000e-004	3.5000e-004	0.0000	2.8780	2.8780	2.0000e-005	0.0000	2.8784
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-004	4.2000e-004	4.0700e-003	1.0000e-005	7.3000e-004	1.0000e-005	7.3000e-004	1.9000e-004	1.0000e-005	2.0000e-004	0.0000	0.6418	0.6418	3.0000e-005	0.0000	0.6425
Total	**1.2200e-003**	**0.0130**	**0.0139**	**4.0000e-005**	**1.4400e-003**	**1.7000e-004**	**1.6000e-003**	**3.8000e-004**	**1.6000e-004**	**5.5000e-004**	**0.0000**	**3.5198**	**3.5198**	**5.0000e-005**	**0.0000**	**3.5209**

3.3 Site Preparation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0153	0.0000	0.0153	8.3000e-003	0.0000	8.3000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.7600e-003	0.0505	0.0380	4.0000e-005		2.8500e-003	2.8500e-003		2.6200e-003	2.6200e-003	0.0000	3.5379	3.5379	1.0700e-003	0.0000	3.5603

Total	**4.7600e-003**	**0.0505**	**0.0380**	**4.0000e-005**	**0.0153**	**2.8500e-003**	**0.0182**	**8.3000e-003**	**2.6200e-003**	**0.0109**	**0.0000**	**3.5379**	**3.5379**	**1.0700e-003**	**0.0000**	**3.5603**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.0000e-005	1.0000e-004	1.0200e-003	0.0000	1.8000e-004	0.0000	1.8000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1605	0.1605	1.0000e-005	0.0000	0.1606
Total	**7.0000e-005**	**1.0000e-004**	**1.0200e-003**	**0.0000**	**1.8000e-004**	**0.0000**	**1.8000e-004**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**0.0000**	**0.1605**	**0.1605**	**1.0000e-005**	**0.0000**	**0.1606**

3.4 Grading - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.5200e-003	0.0000	1.5200e-003	2.3000e-004	0.0000	2.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0337	0.3656	0.2797	4.1000e-004		0.0207	0.0207		0.0191	0.0191	0.0000	38.9724	38.9724	0.0118	0.0000	39.2192
Total	**0.0337**	**0.3656**	**0.2797**	**4.1000e-004**	**1.5200e-003**	**0.0207**	**0.0222**	**2.3000e-004**	**0.0191**	**0.0193**	**0.0000**	**38.9724**	**38.9724**	**0.0118**	**0.0000**	**39.2192**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0367	0.5016	0.3935	1.2600e-003	0.0284	6.5400e-003	0.0350	7.8000e-003	6.0100e-003	0.0138	0.0000	115.2221	115.2221	8.6000e-004	0.0000	115.2401
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.7000e-004	1.3600e-003	0.0132	3.0000e-005	2.3700e-003	2.0000e-005	2.3900e-003	6.3000e-004	2.0000e-005	6.5000e-004	0.0000	2.0858	2.0858	1.1000e-004	0.0000	2.0882
Total	**0.0376**	**0.5029**	**0.4067**	**1.2900e-003**	**0.0308**	**6.5600e-003**	**0.0373**	**8.4300e-003**	**6.0300e-003**	**0.0145**	**0.0000**	**117.3079**	**117.3079**	**9.7000e-004**	**0.0000**	**117.3282**

3.5 Trenching - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.6600e-003	0.0386	0.0294	4.0000e-005		2.3500e-003	2.3500e-003		2.1600e-003	2.1600e-003	0.0000	3.9840	3.9840	1.2000e-003	0.0000	4.0092
Total	**3.6600e-003**	**0.0386**	**0.0294**	**4.0000e-005**		**2.3500e-003**	**2.3500e-003**		**2.1600e-003**	**2.1600e-003**	**0.0000**	**3.9840**	**3.9840**	**1.2000e-003**	**0.0000**	**4.0092**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-004	1.4000e-004	1.4000e-003	0.0000	2.5000e-004	0.0000	2.5000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.2206	0.2206	1.0000e-005	0.0000	0.2209
Total	**1.0000e-004**	**1.4000e-004**	**1.4000e-003**	**0.0000**	**2.5000e-004**	**0.0000**	**2.5000e-004**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**0.0000**	**0.2206**	**0.2206**	**1.0000e-005**	**0.0000**	**0.2209**

3.6 Building Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0329	0.1563	0.1346	1.7000e-004		0.0127	0.0127		0.0122	0.0122	0.0000	13.8283	13.8283	3.7100e-003	0.0000	13.9062
Total	**0.0329**	**0.1563**	**0.1346**	**1.7000e-004**		**0.0127**	**0.0127**		**0.0122**	**0.0122**	**0.0000**	**13.8283**	**13.8283**	**3.7100e-003**	**0.0000**	**13.9062**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0143	0.1204	0.1868	2.8000e-004	0.0142	1.4300e-003	0.0156	3.6600e-003	1.3100e-003	4.9700e-003	0.0000	25.5257	25.5257	2.1000e-004	0.0000	25.5302
Vendor	0.0336	0.2826	0.3827	6.7000e-004	0.0183	4.2400e-003	0.0225	5.2400e-003	3.8900e-003	9.1400e-003	0.0000	61.2112	61.2112	4.9000e-004	0.0000	61.2215

Worker	0.0550	0.0773	0.7506	1.5600e-003	0.1344	1.0700e-003	0.1355	0.0357	9.9000e-004	0.0367	0.0000	118.4339	118.4339	6.3300e-003	0.0000	118.5668
Total	**0.1028**	**0.4803**	**1.3200**	**2.5100e-003**	**0.1669**	**6.7400e-003**	**0.1736**	**0.0446**	**6.1900e-003**	**0.0508**	**0.0000**	**205.1708**	**205.1708**	**7.0300e-003**	**0.0000**	**205.3185**

3.6 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0529	0.2649	0.2348	3.0000e-004		0.0207	0.0207		0.0198	0.0198	0.0000	24.5005	24.5005	6.2500e-003	0.0000	24.6317
Total	**0.0529**	**0.2649**	**0.2348**	**3.0000e-004**		**0.0207**	**0.0207**		**0.0198**	**0.0198**	**0.0000**	**24.5005**	**24.5005**	**6.2500e-003**	**0.0000**	**24.6317**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0220	0.1937	0.3085	5.0000e-004	0.0154	2.2400e-003	0.0176	4.0900e-003	2.0600e-003	6.1500e-003	0.0000	44.7381	44.7381	3.7000e-004	0.0000	44.7459
Vendor	0.0525	0.4514	0.6290	1.2000e-003	0.0326	6.5300e-003	0.0391	9.3500e-003	6.0000e-003	0.0154	0.0000	107.3142	107.3142	8.3000e-004	0.0000	107.3317
Worker	0.0878	0.1235	1.1966	2.7800e-003	0.2398	1.8300e-003	0.2416	0.0638	1.6900e-003	0.0655	0.0000	203.1843	203.1843	0.0103	0.0000	203.4009
Total	**0.1622**	**0.7686**	**2.1341**	**4.4800e-003**	**0.2877**	**0.0106**	**0.2983**	**0.0772**	**9.7500e-003**	**0.0870**	**0.0000**	**355.2366**	**355.2366**	**0.0115**	**0.0000**	**355.4784**

3.7 Architectural Coating - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.7289					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0984	0.7333	0.6976	1.1000e-003		0.0519	0.0519		0.0515	0.0515	0.0000	96.3628	96.3628	0.0157	0.0000	96.6921
Total	**2.8273**	**0.7333**	**0.6976**	**1.1000e-003**		**0.0519**	**0.0519**		**0.0515**	**0.0515**	**0.0000**	**96.3628**	**96.3628**	**0.0157**	**0.0000**	**96.6921**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0159	0.0224	0.2167	5.0000e-004	0.0434	3.3000e-004	0.0438	0.0116	3.1000e-004	0.0119	0.0000	36.8037	36.8037	1.8700e-003	0.0000	36.8430
Total	**0.0159**	**0.0224**	**0.2167**	**5.0000e-004**	**0.0434**	**3.3000e-004**	**0.0438**	**0.0116**	**3.1000e-004**	**0.0119**	**0.0000**	**36.8037**	**36.8037**	**1.8700e-003**	**0.0000**	**36.8430**

3.8 Paving - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.2000e-003	0.0129	9.3100e-003	1.0000e-005		7.1000e-004	7.1000e-004		6.6000e-004	6.6000e-004	0.0000	1.3155	1.3155	4.0000e-004	0.0000	1.3239
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.2000e-003**	**0.0129**	**9.3100e-003**	**1.0000e-005**		**7.1000e-004**	**7.1000e-004**		**6.6000e-004**	**6.6000e-004**	**0.0000**	**1.3155**	**1.3155**	**4.0000e-004**	**0.0000**	**1.3239**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.3000e-004	1.1100e-003	1.7600e-003	0.0000	6.0000e-005	1.0000e-005	7.0000e-005	2.0000e-005	1.0000e-005	3.0000e-005	0.0000	0.2558	0.2558	0.0000	0.0000	0.2558
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3000e-004	1.9000e-004	1.8200e-003	0.0000	3.6000e-004	0.0000	3.7000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.3086	0.3086	2.0000e-005	0.0000	0.3090
Total	**2.6000e-004**	**1.3000e-003**	**3.5800e-003**	**0.0000**	**4.2000e-004**	**1.0000e-005**	**4.4000e-004**	**1.2000e-004**	**1.0000e-005**	**1.3000e-004**	**0.0000**	**0.5644**	**0.5644**	**2.0000e-005**	**0.0000**	**0.5648**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Unmitigated	0.7702	1.6027	7.4000	0.0166	1.1977	0.0215	1.2191	0.3202	0.0198	0.3400	0.0000	1,233.1882	1,233.1882	0.0487	0.0000	1,234.2111

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments High Rise	1,342.88	1,342.88	1342.88	2,997,800	2,997,800
Strip Mall	148.87	148.87	148.87	229,269	229,269
Enclosed Parking with Elevator	0.00	0.00	0.00		
Total	1,491.75	1,491.75	1,491.75	3,227,068	3,227,068

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-[illegible]	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments High Rise	12.40	4.30	5.40	26.10	29.10	44.80	86	11	3
Strip Mall	9.50	7.30	7.30	16.60	64.40	19.00	45	40	15
Enclosed Parking with Elevator	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.551461	0.058468	0.185554	0.123211	0.029507	0.004440	0.012712	0.023230	0.001775	0.001270	0.006089	0.000516	0.001766

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	301.3366	301.3366	0.0203	4.2100e-003	303.0683
NaturalGas Unmitigated	0.0109	0.0931	0.0398	5.9000e-004		7.5300e-003	7.5300e-003		7.5300e-003	7.5300e-003	0.0000	107.7995	107.7995	2.0700e-003	1.9800e-003	108.4555

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments High Rise	2.01115e+006	0.0108	0.0927	0.0394	5.9000e-004		7.4900e-003	7.4900e-003		7.4900e-003	7.4900e-003	0.0000	107.3227	107.3227	2.0600e-003	1.9700e-003	107.9758
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Strip Mall	8934.9	5.0000e-005	4.4000e-004	3.7000e-004	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.4768	0.4768	1.0000e-005	1.0000e-005	0.4797
Total		**0.0109**	**0.0931**	**0.0398**	**5.9000e-004**		**7.5200e-003**	**7.5200e-003**		**7.5200e-003**	**7.5200e-003**	**0.0000**	**107.7995**	**107.7995**	**2.0700e-003**	**1.9800e-003**	**108.4555**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments High Rise	1.01164e+006	197.1507	0.0133	2.7500e-003	198.2837

Enclosed Parking with Elevator	488448	95.1894	6.4300e-003	1.3300e-003	95.7365
Strip Mall	46163.7	8.9964	6.1000e-004	1.3000e-004	9.0481
Total		**301.3366**	**0.0204**	**4.2100e-003**	**303.0683**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Unmitigated	1.9680	0.0268	2.3056	1.2000e-004		0.0133	0.0133		0.0133	0.0133	0.0000	13.9573	13.9573	3.9100e-003	1.9000e-004	14.0975

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.2729					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.6229					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	1.0300e-003	0.0000	6.0000e-005	0.0000		7.1000e-004	7.1000e-004		7.1000e-004	7.1000e-004	0.0000	10.2170	10.2170	2.0000e-004	1.9000e-004	10.2792
Landscaping	0.0712	0.0268	2.3055	1.2000e-004		0.0126	0.0126		0.0126	0.0126	0.0000	3.7403	3.7403	3.7100e-003	0.0000	3.8184

Total	**1.9680**	**0.0268**	**2.3056**	**1.2000e-004**		**0.0133**	**0.0133**		**0.0133**	**0.0133**	**0.0000**	**13.9573**	**13.9573**	**3.9100e-003**	**1.9000e-004**	**14.0975**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Unmitigated	36.8370	0.6683	0.0162	55.8803

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments High Rise	20.0674 / 12.6512	36.1569	0.6559	0.0159	54.8463
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Strip Mall	0.379992 / 0.232898	0.6801	0.0124	3.0000e-004	1.0340
Total		**36.8370**	**0.6683**	**0.0162**	**55.8803**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Unmitigated	29.8539	1.7643	0.0000	66.9045

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments High Rise	141.68	28.7598	1.6997	0.0000	64.4525
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Strip Mall	5.39	1.0941	0.0647	0.0000	2.4520
Total		**29.8539**	**1.7643**	**0.0000**	**66.9045**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

470 S. Market St., San Jose - GHG Per Capita

Santa Clara County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Enclosed Parking with Elevator	256.00	Space	0.00	102,400.00	0
Apartments High Rise	308.00	Dwelling Unit	0.50	308,000.00	881
Strip Mall	5.13	1000sqft	0.00	5,135.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	4			**Operational Year**	2018
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	429.64	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Using most recent, verified PG&E CO2 factor

Land Use - Lot acreage from PD

Vehicle Trips - Trip rates from traffic consultant, adjst. for MU and transit. No existing trip credit for GHG per capita.

Woodstoves - No woodstoves, possible wood fireplaces.

Energy Use - 2013 Title 24 standards 25% more energy-efficient for residential and 30% for non-res than 2008 standards.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	5.00	180.00
tblConstructionPhase	NumDays	100.00	309.00
tblConstructionPhase	NumDays	10.00	20.00

tblConstructionPhase	NumDays	2.00	65.00
tblConstructionPhase	NumDays	5.00	10.00
tblConstructionPhase	NumDays	1.00	5.00
tblConstructionPhase	PhaseEndDate	6/13/2018	10/19/2017
tblConstructionPhase	PhaseEndDate	7/27/2017	10/4/2017
tblConstructionPhase	PhaseEndDate	11/2/2017	8/24/2017
tblConstructionPhase	PhaseStartDate	10/5/2017	2/10/2017
tblConstructionPhase	PhaseStartDate	5/21/2016	7/29/2016
tblConstructionPhase	PhaseStartDate	10/20/2017	8/11/2017
tblEnergyUse	LightingElect	741.44	556.08
tblEnergyUse	LightingElect	2.63	1.84
tblEnergyUse	LightingElect	5.64	3.95
tblEnergyUse	T24E	226.57	169.93
tblEnergyUse	T24E	3.92	2.74
tblEnergyUse	T24E	3.37	2.36
tblEnergyUse	T24NG	6,391.64	4,793.73
tblEnergyUse	T24NG	2.49	1.74
tblFireplaces	FireplaceWoodMass	92.40	0.00
tblFireplaces	NumberGas	169.40	212.52
tblFireplaces	NumberWood	43.12	0.00
tblGrading	AcresOfGrading	0.00	0.50
tblGrading	MaterialExported	0.00	26,900.00
tblLandUse	LandUseSquareFeet	5,130.00	5,135.00
tblLandUse	LotAcreage	2.30	0.00
tblLandUse	LotAcreage	4.97	0.50
tblLandUse	LotAcreage	0.12	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	7.00	2.40
tblOffRoadEquipment	UsageHours	7.00	1.80
tblOffRoadEquipment	UsageHours	1.00	8.00
tblOffRoadEquipment	UsageHours	6.00	7.40
tblProjectCharacteristics	CO2IntensityFactor	641.35	429.64
tblProjectCharacteristics	OperationalYear	2014	2018
tblTripsAndVMT	HaulingTripLength	20.00	7.30
tblTripsAndVMT	HaulingTripLength	20.00	7.30
tblTripsAndVMT	HaulingTripNumber	68.00	84.00
tblTripsAndVMT	HaulingTripNumber	0.00	5,460.00
tblTripsAndVMT	HaulingTripNumber	0.00	20.00
tblVehicleTrips	ST_TR	7.16	5.33
tblVehicleTrips	ST_TR	42.04	35.56
tblVehicleTrips	SU_TR	6.07	5.33
tblVehicleTrips	SU_TR	20.43	35.56
tblVehicleTrips	WD_TR	6.59	5.33
tblVehicleTrips	WD_TR	44.32	35.56
tblWoodstoves	NumberCatalytic	1.54	0.00
tblWoodstoves	NumberNoncatalytic	1.54	0.00
tblWoodstoves	WoodstoveDayYear	10.82	0.00
tblWoodstoves	WoodstoveWoodMass	954.80	0.00

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.9680	0.0268	2.3056	1.2000e-004		0.0133	0.0133		0.0133	0.0133	0.0000	13.9573	13.9573	3.9100e-003	1.9000e-004	14.0975
Energy	0.0109	0.0931	0.0398	5.9000e-004		7.5300e-003	7.5300e-003		7.5300e-003	7.5300e-003	0.0000	409.1361	409.1361	0.0224	6.1800e-003	411.5238
Mobile	0.9417	1.9597	9.0481	0.0203	1.4644	0.0262	1.4906	0.3915	0.0242	0.4157	0.0000	1,507.8011	1,507.8011	0.0596	0.0000	1,509.0517
Waste						0.0000	0.0000		0.0000	0.0000	29.8539	0.0000	29.8539	1.7643	0.0000	66.9045
Water						0.0000	0.0000		0.0000	0.0000	6.4870	30.3499	36.8370	0.6683	0.0162	55.8803
Total	**2.9206**	**2.0795**	**11.3935**	**0.0210**	**1.4644**	**0.0471**	**1.5114**	**0.3915**	**0.0450**	**0.4365**	**36.3409**	**1,961.2444**	**1,997.5853**	**2.5185**	**0.0225**	**2,057.4578**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Unmitigated	0.9417	1.9597	9.0481	0.0203	1.4644	0.0262	1.4906	0.3915	0.0242	0.4157	0.0000	1,507.8011	1,507.8011	0.0596	0.0000	1,509.0517

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments High Rise	1,641.64	1,641.64	1641.64	3,664,741	3,664,741
Enclosed Parking with Elevator	0.00	0.00	0.00		
Strip Mall	182.42	182.42	182.42	280,937	280,937
Total	1,824.06	1,824.06	1,824.06	3,945,679	3,945,679

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments High Rise	12.40	4.30	5.40	26.10	29.10	44.80	86	11	3
Enclosed Parking with Elevator	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Strip Mall	9.50	7.30	7.30	16.60	64.40	19.00	45	40	15

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.551461	0.058468	0.185554	0.123211	0.029507	0.004440	0.012712	0.023230	0.001775	0.001270	0.006089	0.000516	0.001766

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	301.3366	301.3366	0.0203	4.2100e-003	303.0683
NaturalGas Unmitigated	0.0109	0.0931	0.0398	5.9000e-004		7.5300e-003	7.5300e-003		7.5300e-003	7.5300e-003	0.0000	107.7995	107.7995	2.0700e-003	1.9800e-003	108.4555

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments High Rise	2.01115e+006	0.0108	0.0927	0.0394	5.9000e-004		7.4900e-003	7.4900e-003		7.4900e-003	7.4900e-003	0.0000	107.3227	107.3227	2.0600e-003	1.9700e-003	107.9758
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Strip Mall	8934.9	5.0000e-005	4.4000e-004	3.7000e-004	0.0000		3.0000e-005	3.0000e-005		3.0000e-005	3.0000e-005	0.0000	0.4768	0.4768	1.0000e-005	1.0000e-005	0.4797
Total		**0.0109**	**0.0931**	**0.0398**	**5.9000e-004**		**7.5200e-003**	**7.5200e-003**		**7.5200e-003**	**7.5200e-003**	**0.0000**	**107.7995**	**107.7995**	**2.0700e-003**	**1.9800e-003**	**108.4555**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments High Rise	1.01164e+006	197.1507	0.0133	2.7500e-003	198.2837
Enclosed Parking with Elevator	488448	95.1894	6.4300e-003	1.3300e-003	95.7365
Strip Mall	46163.7	8.9964	6.1000e-004	1.3000e-004	9.0481
Total		**301.3366**	**0.0204**	**4.2100e-003**	**303.0683**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Unmitigated	1.9680	0.0268	2.3056	1.2000e-004		0.0133	0.0133		0.0133	0.0133	0.0000	13.9573	13.9573	3.9100e-003	1.9000e-004	14.0975

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.2729					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.6229					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	1.0300e-003	0.0000	6.0000e-005	0.0000		7.1000e-004	7.1000e-004		7.1000e-004	7.1000e-004	0.0000	10.2170	10.2170	2.0000e-004	1.9000e-004	10.2792
Landscaping	0.0712	0.0268	2.3055	1.2000e-004		0.0126	0.0126		0.0126	0.0126	0.0000	3.7403	3.7403	3.7100e-003	0.0000	3.8184
Total	**1.9680**	**0.0268**	**2.3056**	**1.2000e-004**		**0.0133**	**0.0133**		**0.0133**	**0.0133**	**0.0000**	**13.9573**	**13.9573**	**3.9100e-003**	**1.9000e-004**	**14.0975**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Unmitigated	36.8370	0.6683	0.0162	55.8803

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments High Rise	20.0674 / 12.6512	36.1569	0.6559	0.0159	54.8463
Enclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Strip Mall	0.379992 / 0.232898	0.6801	0.0124	3.0000e-004	1.0340
Total		**36.8370**	**0.6683**	**0.0162**	**55.8803**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Unmitigated	29.8539	1.7643	0.0000	66.9045

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments High Rise	141.68	28.7598	1.6997	0.0000	64.4525
Enclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Strip Mall	5.39	1.0941	0.0647	0.0000	2.4520
Total		**29.8539**	**1.7643**	**0.0000**	**66.9045**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

470 S. Market St., San Jose - Construction TAC

Santa Clara County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Enclosed Parking with Elevator	256.00	Space	0.00	102,400.00	0
Apartments High Rise	308.00	Dwelling Unit	0.50	308,000.00	881
Strip Mall	5.13	1000sqft	0.00	5,135.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	4			**Operational Year**	2018
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	429.64	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Land Use - Lot acreage from PD

Construction Phase - Anticipated schedule from project applicant

Off-road Equipment - Proposed equipment list provided by project applicant

Off-road Equipment - Proposed equipment list provided by project applicant. Electric crane, temporary line power.

Off-road Equipment - Proposed equipment list provided by project applicant

Off-road Equipment - Proposed equipment list provided by project applicant

Off-road Equipment - Proposed equipment list provided by project applicant

Off-road Equipment - Proposed equipment list provided by project applicant

Off-road Equipment - Proposed equipment list provided by project applicant

Trips and VMT - Demo: 68 + (150 tons pavement @ 20tons/truck - 16 trips) = 84. Bldg: 5,460 trips. Paving: 150 cy @ 16cy/truck = 20 trips. 1 mile trip lengths.

Demolition - 15,000 sf building demo

Grading - 26,900 cy export

Construction Off-road Equipment Mitigation - Tier 2 engines for equip > 50hp, Tier 4 portable equipment (aerial lifts, air compressors, concrete saws, forklifts). BAAQMD BMPs.

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstructionPhase	NumDays	5.00	180.00
tblConstructionPhase	NumDays	100.00	309.00
tblConstructionPhase	NumDays	10.00	20.00

tblConstructionPhase	NumDays	2.00	65.00
tblConstructionPhase	NumDays	5.00	10.00
tblConstructionPhase	NumDays	1.00	5.00
tblConstructionPhase	PhaseEndDate	6/13/2018	10/19/2017
tblConstructionPhase	PhaseEndDate	7/27/2017	10/4/2017
tblConstructionPhase	PhaseEndDate	11/2/2017	8/24/2017
tblConstructionPhase	PhaseStartDate	10/5/2017	2/10/2017
tblConstructionPhase	PhaseStartDate	5/21/2016	7/29/2016
tblConstructionPhase	PhaseStartDate	10/20/2017	8/11/2017
tblEnergyUse	LightingElect	741.44	556.08
tblEnergyUse	LightingElect	2.63	1.84
tblEnergyUse	LightingElect	5.64	3.95
tblEnergyUse	T24E	226.57	169.93
tblEnergyUse	T24E	3.92	2.74
tblEnergyUse	T24E	3.37	2.36
tblEnergyUse	T24NG	6,391.64	4,793.73
tblEnergyUse	T24NG	2.49	1.74
tblFireplaces	FireplaceWoodMass	92.40	0.00
tblFireplaces	NumberGas	169.40	212.52
tblFireplaces	NumberWood	43.12	0.00
tblGrading	AcresOfGrading	0.00	0.50
tblGrading	MaterialExported	0.00	26,900.00
tblLandUse	LandUseSquareFeet	5,130.00	5,135.00
tblLandUse	LotAcreage	2.30	0.00
tblLandUse	LotAcreage	4.97	0.50
tblLandUse	LotAcreage	0.12	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	3.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	7.00	2.40
tblOffRoadEquipment	UsageHours	7.00	1.80
tblOffRoadEquipment	UsageHours	1.00	8.00
tblOffRoadEquipment	UsageHours	6.00	7.40
tblProjectCharacteristics	CO2IntensityFactor	641.35	429.64
tblProjectCharacteristics	OperationalYear	2014	2018
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripLength	20.00	1.00
tblTripsAndVMT	HaulingTripNumber	68.00	84.00
tblTripsAndVMT	HaulingTripNumber	0.00	5,460.00
tblTripsAndVMT	HaulingTripNumber	0.00	20.00
tblTripsAndVMT	VendorTripLength	7.30	1.00
tblTripsAndVMT	VendorTripLength	7.30	1.00
tblTripsAndVMT	VendorTripLength	7.30	1.00
tblTripsAndVMT	VendorTripLength	7.30	1.00
tblTripsAndVMT	VendorTripLength	7.30	1.00

tblTripsAndVMT	VendorTripLength	7.30	1.00
tblTripsAndVMT	VendorTripLength	7.30	1.00
tblTripsAndVMT	WorkerTripLength	12.40	1.00
tblTripsAndVMT	WorkerTripLength	12.40	1.00
tblTripsAndVMT	WorkerTripLength	12.40	1.00
tblTripsAndVMT	WorkerTripLength	12.40	1.00
tblTripsAndVMT	WorkerTripLength	12.40	1.00
tblTripsAndVMT	WorkerTripLength	12.40	1.00
tblTripsAndVMT	WorkerTripLength	12.40	1.00
tblVehicleTrips	ST_TR	7.16	4.36
tblVehicleTrips	ST_TR	42.04	29.02
tblVehicleTrips	SU_TR	6.07	4.36
tblVehicleTrips	SU_TR	20.43	29.02
tblVehicleTrips	WD_TR	6.59	4.36
tblVehicleTrips	WD_TR	44.32	29.02
tblWoodstoves	NumberCatalytic	1.54	0.00
tblWoodstoves	NumberNoncatalytic	1.54	0.00
tblWoodstoves	WoodstoveDayYear	10.82	0.00
tblWoodstoves	WoodstoveWoodMass	954.80	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.1876	1.0041	1.5860	1.2800e-003	0.0415	0.0497	0.0912	0.0143	0.0463	0.0606	0.0000	113.1792	113.1792	0.0232	0.0000	113.6661

2017	3.0122	1.2421	2.0746	2.1100e-003	0.0299	0.0752	0.1051	8.0900e-003	0.0737	0.0818	0.0000	177.3624	177.3624	0.0246	0.0000	177.8787
Total	**3.1998**	**2.2463**	**3.6607**	**3.3900e-003**	**0.0714**	**0.1250**	**0.1963**	**0.0224**	**0.1200**	**0.1424**	**0.0000**	**290.5416**	**290.5416**	**0.0478**	**0.0000**	**291.5448**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.1432	0.8326	1.5508	1.2800e-003	0.0282	0.0250	0.0532	6.8500e-003	0.0248	0.0317	0.0000	113.1792	113.1792	0.0232	0.0000	113.6660
2017	2.9142	0.5800	2.0914	2.1100e-003	0.0299	0.0136	0.0435	8.0900e-003	0.0134	0.0215	0.0000	177.3622	177.3622	0.0246	0.0000	177.8785
Total	**3.0574**	**1.4126**	**3.6423**	**3.3900e-003**	**0.0581**	**0.0386**	**0.0966**	**0.0149**	**0.0383**	**0.0532**	**0.0000**	**290.5414**	**290.5414**	**0.0478**	**0.0000**	**291.5445**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**4.45**	**37.12**	**0.50**	**0.00**	**18.66**	**69.14**	**50.79**	**33.36**	**68.11**	**62.64**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2016	1/28/2016	5	20	
2	Site Preparation	Site Preparation	1/29/2016	2/4/2016	5	5	
3	Grading	Grading	2/5/2016	5/5/2016	5	65	
4	Trenching	Trenching	5/6/2016	5/20/2016	5	11	
5	Building Construction	Building Construction	7/29/2016	10/4/2017	5	309	
6	Architectural Coating	Architectural Coating	2/10/2017	10/19/2017	5	180	
7	Paving	Paving	8/11/2017	8/24/2017	5	10	

Acres of Grading (Site Preparation Phase): 0.5

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 623,700; Residential Outdoor: 207,900; Non-Residential Indoor: 161,303; Non-Residential Outdoor: 53,768

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	2.00	81	0.73
Demolition	Excavators	1	8.00	162	0.38
Demolition	Rubber Tired Dozers	1	8.00	255	0.40
Demolition	Tractors/Loaders/Backhoes	0	6.00	97	0.37
Site Preparation	Graders	0	8.00	174	0.41
Site Preparation	Rubber Tired Dozers	1	8.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Concrete/Industrial Saws	0	8.00	81	0.73
Grading	Excavators	2	7.40	162	0.38
Grading	Rubber Tired Dozers	0	1.00	255	0.40
Grading	Tractors/Loaders/Backhoes	1	7.40	97	0.37
Trenching	Excavators	1	7.30	162	0.38
Trenching	Tractors/Loaders/Backhoes	1	7.30	97	0.37
Building Construction	Cranes	0	4.00	226	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Building Construction	Welders	1	6.00	46	0.45
Architectural Coating	Aerial Lifts	2	8.00	62	0.31
Architectural Coating	Air Compressors	3	6.00	78	0.48
Paving	Cement and Mortar Mixers	0	6.00	9	0.56
Paving	Pavers	1	2.40	125	0.42
Paving	Paving Equipment	1	1.80	130	0.36

Paving	Rollers	1	1.80	80	0.38
Paving	Tractors/Loaders/Backhoes	0	7.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	3	8.00	0.00	84.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	8.00	0.00	0.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	0.00	3,363.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT
Trenching	2	5.00	0.00	0.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT
Building Construction	2	266.00	51.00	5,460.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	5	53.00	0.00	0.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT
Paving	3	8.00	0.00	20.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use Soil Stabilizer

Replace Ground Cover

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					7.3800e-003	0.0000	7.3800e-003	1.1200e-003	0.0000	1.1200e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Off-Road	0.0179	0.1946	0.1486	1.6000e-004		9.5000e-003	9.5000e-003		8.8100e-003	8.8100e-003	0.0000	14.7102	14.7102	4.1600e-003	0.0000	14.7976
Total	**0.0179**	**0.1946**	**0.1486**	**1.6000e-004**	**7.3800e-003**	**9.5000e-003**	**0.0169**	**1.1200e-003**	**8.8100e-003**	**9.9300e-003**	**0.0000**	**14.7102**	**14.7102**	**4.1600e-003**	**0.0000**	**14.7976**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.6000e-004	1.5000e-003	7.0900e-003	0.0000	4.0000e-005	1.0000e-005	5.0000e-005	1.0000e-005	1.0000e-005	2.0000e-005	0.0000	0.2078	0.2078	0.0000	0.0000	0.2079
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.2000e-004	7.0000e-005	9.1000e-004	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0669	0.0669	1.0000e-005	0.0000	0.0670
Total	**6.8000e-004**	**1.5700e-003**	**8.0000e-003**	**0.0000**	**1.0000e-004**	**1.0000e-005**	**1.1000e-004**	**3.0000e-005**	**1.0000e-005**	**4.0000e-005**	**0.0000**	**0.2747**	**0.2747**	**1.0000e-005**	**0.0000**	**0.2749**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.3200e-003	0.0000	3.3200e-003	2.5000e-004	0.0000	2.5000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.3800e-003	0.1206	0.0966	1.6000e-004		2.9900e-003	2.9900e-003		2.9900e-003	2.9900e-003	0.0000	14.7101	14.7101	4.1600e-003	0.0000	14.7975
Total	**4.3800e-003**	**0.1206**	**0.0966**	**1.6000e-004**	**3.3200e-003**	**2.9900e-003**	**6.3100e-003**	**2.5000e-004**	**2.9900e-003**	**3.2400e-003**	**0.0000**	**14.7101**	**14.7101**	**4.1600e-003**	**0.0000**	**14.7975**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.6000e-004	1.5000e-003	7.0900e-003	0.0000	4.0000e-005	1.0000e-005	5.0000e-005	1.0000e-005	1.0000e-005	2.0000e-005	0.0000	0.2078	0.2078	0.0000	0.0000	0.2079
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.2000e-004	7.0000e-005	9.1000e-004	0.0000	6.0000e-005	0.0000	6.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0669	0.0669	1.0000e-005	0.0000	0.0670
Total	**6.8000e-004**	**1.5700e-003**	**8.0000e-003**	**0.0000**	**1.0000e-004**	**1.0000e-005**	**1.1000e-004**	**3.0000e-005**	**1.0000e-005**	**4.0000e-005**	**0.0000**	**0.2747**	**0.2747**	**1.0000e-005**	**0.0000**	**0.2749**

3.3 Site Preparation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0153	0.0000	0.0153	8.3000e-003	0.0000	8.3000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.8000e-003	0.0510	0.0383	4.0000e-005		2.8700e-003	2.8700e-003		2.6400e-003	2.6400e-003	0.0000	3.5625	3.5625	1.0700e-003	0.0000	3.5851
Total	**4.8000e-003**	**0.0510**	**0.0383**	**4.0000e-005**	**0.0153**	**2.8700e-003**	**0.0182**	**8.3000e-003**	**2.6400e-003**	**0.0109**	**0.0000**	**3.5625**	**3.5625**	**1.0700e-003**	**0.0000**	**3.5851**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-005	2.0000e-005	2.3000e-004	0.0000	1.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0167	0.0167	0.0000	0.0000	0.0168
Total	**5.0000e-005**	**2.0000e-005**	**2.3000e-004**	**0.0000**	**1.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0167**	**0.0167**	**0.0000**	**0.0000**	**0.0168**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.8900e-003	0.0000	6.8900e-003	1.8700e-003	0.0000	1.8700e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.2700e-003	0.0337	0.0234	4.0000e-005		1.0000e-003	1.0000e-003		1.0000e-003	1.0000e-003	0.0000	3.5625	3.5625	1.0700e-003	0.0000	3.5851
Total	**1.2700e-003**	**0.0337**	**0.0234**	**4.0000e-005**	**6.8900e-003**	**1.0000e-003**	**7.8900e-003**	**1.8700e-003**	**1.0000e-003**	**2.8700e-003**	**0.0000**	**3.5625**	**3.5625**	**1.0700e-003**	**0.0000**	**3.5851**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-005	2.0000e-005	2.3000e-004	0.0000	1.0000e-005	0.0000	2.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0167	0.0167	0.0000	0.0000	0.0168
Total	**5.0000e-005**	**2.0000e-005**	**2.3000e-004**	**0.0000**	**1.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0167**	**0.0167**	**0.0000**	**0.0000**	**0.0168**

3.4 Grading - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.5200e-003	0.0000	1.5200e-003	2.3000e-004	0.0000	2.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0336	0.3643	0.2787	4.1000e-004		0.0206	0.0206		0.0190	0.0190	0.0000	38.8224	38.8224	0.0117	0.0000	39.0683
Total	**0.0336**	**0.3643**	**0.2787**	**4.1000e-004**	**1.5200e-003**	**0.0206**	**0.0222**	**2.3000e-004**	**0.0190**	**0.0192**	**0.0000**	**38.8224**	**38.8224**	**0.0117**	**0.0000**	**39.0683**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0184	0.0599	0.2839	1.0000e-004	1.4500e-003	4.2000e-004	1.8800e-003	4.0000e-004	3.9000e-004	7.9000e-004	0.0000	8.3209	8.3209	1.2000e-004	0.0000	8.3235
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.0000e-004	2.4000e-004	2.9700e-003	0.0000	1.9000e-004	0.0000	2.0000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.2174	0.2174	2.0000e-005	0.0000	0.2178
Total	**0.0191**	**0.0602**	**0.2868**	**1.0000e-004**	**1.6400e-003**	**4.2000e-004**	**2.0800e-003**	**4.5000e-004**	**3.9000e-004**	**8.4000e-004**	**0.0000**	**8.5383**	**8.5383**	**1.4000e-004**	**0.0000**	**8.5412**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.8000e-004	0.0000	6.8000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0168	0.3626	0.3119	4.1000e-004		0.0120	0.0120		0.0120	0.0120	0.0000	38.8224	38.8224	0.0117	0.0000	39.0683
Total	**0.0168**	**0.3626**	**0.3119**	**4.1000e-004**	**6.8000e-004**	**0.0120**	**0.0127**	**5.0000e-005**	**0.0120**	**0.0121**	**0.0000**	**38.8224**	**38.8224**	**0.0117**	**0.0000**	**39.0683**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0184	0.0599	0.2839	1.0000e-004	1.4500e-003	4.2000e-004	1.8800e-003	4.0000e-004	3.9000e-004	7.9000e-004	0.0000	8.3209	8.3209	1.2000e-004	0.0000	8.3235
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.0000e-004	2.4000e-004	2.9700e-003	0.0000	1.9000e-004	0.0000	2.0000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.2174	0.2174	2.0000e-005	0.0000	0.2178
Total	**0.0191**	**0.0602**	**0.2868**	**1.0000e-004**	**1.6400e-003**	**4.2000e-004**	**2.0800e-003**	**4.5000e-004**	**3.9000e-004**	**8.4000e-004**	**0.0000**	**8.5383**	**8.5383**	**1.4000e-004**	**0.0000**	**8.5412**

3.5 Trenching - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.6600e-003	0.0386	0.0293	4.0000e-005		2.3500e-003	2.3500e-003		2.1600e-003	2.1600e-003	0.0000	3.9774	3.9774	1.2000e-003	0.0000	4.0026

Total	**3.6600e-003**	**0.0386**	**0.0293**	**4.0000e-005**		**2.3500e-003**	**2.3500e-003**		**2.1600e-003**	**2.1600e-003**	**0.0000**	**3.9774**	**3.9774**	**1.2000e-003**	**0.0000**	**4.0026**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.0000e-005	3.0000e-005	3.1000e-004	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0230	0.0230	0.0000	0.0000	0.0230
Total	**7.0000e-005**	**3.0000e-005**	**3.1000e-004**	**0.0000**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0230**	**0.0230**	**0.0000**	**0.0000**	**0.0230**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.7700e-003	0.0378	0.0319	4.0000e-005		1.3100e-003	1.3100e-003		1.3100e-003	1.3100e-003	0.0000	3.9774	3.9774	1.2000e-003	0.0000	4.0026
Total	**1.7700e-003**	**0.0378**	**0.0319**	**4.0000e-005**		**1.3100e-003**	**1.3100e-003**		**1.3100e-003**	**1.3100e-003**	**0.0000**	**3.9774**	**3.9774**	**1.2000e-003**	**0.0000**	**4.0026**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.0000e-005	3.0000e-005	3.1000e-004	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0230	0.0230	0.0000	0.0000	0.0230
Total	**7.0000e-005**	**3.0000e-005**	**3.1000e-004**	**0.0000**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0230**	**0.0230**	**0.0000**	**0.0000**	**0.0230**

3.6 Building Construction - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0329	0.1563	0.1346	1.7000e-004		0.0127	0.0127		0.0122	0.0122	0.0000	13.8283	13.8283	3.7100e-003	0.0000	13.9062
Total	**0.0329**	**0.1563**	**0.1346**	**1.7000e-004**		**0.0127**	**0.0127**		**0.0122**	**0.0122**	**0.0000**	**13.8283**	**13.8283**	**3.7100e-003**	**0.0000**	**13.9062**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.0107	0.0350	0.1655	6.0000e-005	1.9600e-003	2.5000e-004	2.2100e-003	5.1000e-004	2.3000e-004	7.3000e-004	0.0000	4.8529	4.8529	7.0000e-005	0.0000	4.8544
Vendor	0.0245	0.0892	0.3273	1.4000e-004	2.5600e-003	7.6000e-004	3.3200e-003	7.4000e-004	6.9000e-004	1.4300e-003	0.0000	12.2289	12.2289	1.5000e-004	0.0000	12.2320
Worker	0.0398	0.0135	0.1684	1.6000e-004	0.0110	2.0000e-004	0.0112	2.9400e-003	1.8000e-004	3.1200e-003	0.0000	12.3439	12.3439	9.6000e-004	0.0000	12.3641
Total	**0.0750**	**0.1377**	**0.6613**	**3.6000e-004**	**0.0155**	**1.2100e-003**	**0.0167**	**4.1900e-003**	**1.1000e-003**	**5.2800e-003**	**0.0000**	**29.4257**	**29.4257**	**1.1800e-003**	**0.0000**	**29.4505**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0242	0.0784	0.1303	1.7000e-004		6.0200e-003	6.0200e-003		6.0200e-003	6.0200e-003	0.0000	13.8283	13.8283	3.7100e-003	0.0000	13.9062
Total	**0.0242**	**0.0784**	**0.1303**	**1.7000e-004**		**6.0200e-003**	**6.0200e-003**		**6.0200e-003**	**6.0200e-003**	**0.0000**	**13.8283**	**13.8283**	**3.7100e-003**	**0.0000**	**13.9062**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0107	0.0350	0.1655	6.0000e-005	1.9600e-003	2.5000e-004	2.2100e-003	5.1000e-004	2.3000e-004	7.3000e-004	0.0000	4.8529	4.8529	7.0000e-005	0.0000	4.8544
Vendor	0.0245	0.0892	0.3273	1.4000e-004	2.5600e-003	7.6000e-004	3.3200e-003	7.4000e-004	6.9000e-004	1.4300e-003	0.0000	12.2289	12.2289	1.5000e-004	0.0000	12.2320
Worker	0.0398	0.0135	0.1684	1.6000e-004	0.0110	2.0000e-004	0.0112	2.9400e-003	1.8000e-004	3.1200e-003	0.0000	12.3439	12.3439	9.6000e-004	0.0000	12.3641
Total	**0.0750**	**0.1377**	**0.6613**	**3.6000e-004**	**0.0155**	**1.2100e-003**	**0.0167**	**4.1900e-003**	**1.1000e-003**	**5.2800e-003**	**0.0000**	**29.4257**	**29.4257**	**1.1800e-003**	**0.0000**	**29.4505**

3.6 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0529	0.2649	0.2348	3.0000e-004		0.0207	0.0207		0.0198	0.0198	0.0000	24.5005	24.5005	6.2500e-003	0.0000	24.6317
Total	**0.0529**	**0.2649**	**0.2348**	**3.0000e-004**		**0.0207**	**0.0207**		**0.0198**	**0.0198**	**0.0000**	**24.5005**	**24.5005**	**6.2500e-003**	**0.0000**	**24.6317**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0160	0.0577	0.2726	1.0000e-004	2.1300e-003	3.8000e-004	2.5200e-003	5.7000e-004	3.5000e-004	9.2000e-004	0.0000	8.4920	8.4920	1.3000e-004	0.0000	8.4947
Vendor	0.0374	0.1467	0.5388	2.5000e-004	4.5700e-003	1.1500e-003	5.7300e-003	1.3200e-003	1.0600e-003	2.3800e-003	0.0000	21.4258	21.4258	2.6000e-004	0.0000	21.4313
Worker	0.0654	0.0215	0.2697	2.9000e-004	0.0196	3.5000e-004	0.0199	5.2400e-003	3.2000e-004	5.5600e-003	0.0000	21.1824	21.1824	1.5400e-003	0.0000	21.2147
Total	**0.1188**	**0.2259**	**1.0810**	**6.4000e-004**	**0.0263**	**1.8800e-003**	**0.0282**	**7.1300e-003**	**1.7300e-003**	**8.8600e-003**	**0.0000**	**51.1002**	**51.1002**	**1.9300e-003**	**0.0000**	**51.1406**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0386	0.1353	0.2283	3.0000e-004		9.6700e-003	9.6700e-003		9.6700e-003	9.6700e-003	0.0000	24.5004	24.5004	6.2500e-003	0.0000	24.6317
Total	**0.0386**	**0.1353**	**0.2283**	**3.0000e-004**		**9.6700e-003**	**9.6700e-003**		**9.6700e-003**	**9.6700e-003**	**0.0000**	**24.5004**	**24.5004**	**6.2500e-003**	**0.0000**	**24.6317**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0160	0.0577	0.2726	1.0000e-004	2.1300e-003	3.8000e-004	2.5200e-003	5.7000e-004	3.5000e-004	9.2000e-004	0.0000	8.4920	8.4920	1.3000e-004	0.0000	8.4947
Vendor	0.0374	0.1467	0.5388	2.5000e-004	4.5700e-003	1.1500e-003	5.7300e-003	1.3200e-003	1.0600e-003	2.3800e-003	0.0000	21.4258	21.4258	2.6000e-004	0.0000	21.4313
Worker	0.0654	0.0215	0.2697	2.9000e-004	0.0196	3.5000e-004	0.0199	5.2400e-003	3.2000e-004	5.5600e-003	0.0000	21.1824	21.1824	1.5400e-003	0.0000	21.2147
Total	**0.1188**	**0.2259**	**1.0810**	**6.4000e-004**	**0.0263**	**1.8800e-003**	**0.0282**	**7.1300e-003**	**1.7300e-003**	**8.8600e-003**	**0.0000**	**51.1002**	**51.1002**	**1.9300e-003**	**0.0000**	**51.1406**

3.7 Architectural Coating - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.7289					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Off-Road	0.0984	0.7342	0.6987	1.1000e-003		0.0519	0.0519		0.0515	0.0515	0.0000	96.5229	96.5229	0.0157	0.0000	96.8533
Total	**2.8273**	**0.7342**	**0.6987**	**1.1000e-003**		**0.0519**	**0.0519**		**0.0515**	**0.0515**	**0.0000**	**96.5229**	**96.5229**	**0.0157**	**0.0000**	**96.8533**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0119	3.9000e-003	0.0489	5.0000e-005	3.5500e-003	6.0000e-005	3.6100e-003	9.5000e-004	6.0000e-005	1.0100e-003	0.0000	3.8369	3.8369	2.8000e-004	0.0000	3.8427
Total	**0.0119**	**3.9000e-003**	**0.0489**	**5.0000e-005**	**3.5500e-003**	**6.0000e-005**	**3.6100e-003**	**9.5000e-004**	**6.0000e-005**	**1.0100e-003**	**0.0000**	**3.8369**	**3.8369**	**2.8000e-004**	**0.0000**	**3.8427**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	2.7289					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0154	0.2020	0.7205	1.1000e-003		1.5600e-003	1.5600e-003		1.5600e-003	1.5600e-003	0.0000	96.5228	96.5228	0.0157	0.0000	96.8531
Total	**2.7442**	**0.2020**	**0.7205**	**1.1000e-003**		**1.5600e-003**	**1.5600e-003**		**1.5600e-003**	**1.5600e-003**	**0.0000**	**96.5228**	**96.5228**	**0.0157**	**0.0000**	**96.8531**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0119	3.9000e-003	0.0489	5.0000e-005	3.5500e-003	6.0000e-005	3.6100e-003	9.5000e-004	6.0000e-005	1.0100e-003	0.0000	3.8369	3.8369	2.8000e-004	0.0000	3.8427
Total	**0.0119**	**3.9000e-003**	**0.0489**	**5.0000e-005**	**3.5500e-003**	**6.0000e-005**	**3.6100e-003**	**9.5000e-004**	**6.0000e-005**	**1.0100e-003**	**0.0000**	**3.8369**	**3.8369**	**2.8000e-004**	**0.0000**	**3.8427**

3.8 Paving - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.2100e-003	0.0129	9.3500e-003	1.0000e-005		7.1000e-004	7.1000e-004		6.6000e-004	6.6000e-004	0.0000	1.3212	1.3212	4.0000e-004	0.0000	1.3297
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.2100e-003**	**0.0129**	**9.3500e-003**	**1.0000e-005**		**7.1000e-004**	**7.1000e-004**		**6.6000e-004**	**6.6000e-004**	**0.0000**	**1.3212**	**1.3212**	**4.0000e-004**	**0.0000**	**1.3297**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	9.0000e-005	3.3000e-004	1.5600e-003	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0485	0.0485	0.0000	0.0000	0.0486
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-004	3.0000e-005	4.1000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0322	0.0322	0.0000	0.0000	0.0322
Total	**1.9000e-004**	**3.6000e-004**	**1.9700e-003**	**0.0000**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0807**	**0.0807**	**0.0000**	**0.0000**	**0.0808**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.8000e-004	0.0125	0.0108	1.0000e-005		4.1000e-004	4.1000e-004		4.1000e-004	4.1000e-004	0.0000	1.3212	1.3212	4.0000e-004	0.0000	1.3297
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.8000e-004**	**0.0125**	**0.0108**	**1.0000e-005**		**4.1000e-004**	**4.1000e-004**		**4.1000e-004**	**4.1000e-004**	**0.0000**	**1.3212**	**1.3212**	**4.0000e-004**	**0.0000**	**1.3297**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	9.0000e-005	3.3000e-004	1.5600e-003	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0485	0.0485	0.0000	0.0000	0.0486
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-004	3.0000e-005	4.1000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0322	0.0322	0.0000	0.0000	0.0322
Total	**1.9000e-004**	**3.6000e-004**	**1.9700e-003**	**0.0000**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0807**	**0.0807**	**0.0000**	**0.0000**	**0.0808**

DPM Construction Emissions and Modeling Emission Rates - Unmitigated

Construction Year	Activity	DPM (ton/year)	Area Source	DPM Emissions (lb/yr)	DPM Emissions (lb/hr)	DPM Emissions (g/s)	Modeled Area (m^2)	DPM Emission Rate ($g/s/m^2$)
2016	Const-Area 1	0.0463	CON1_DPM	92.6	0.02819	3.55E-03	2,086	1.70E-06
2017	Const-Area 1	0.0737	CON1_DPM	147.4	0.04487	5.65E-03	2,086	2.71E-06
Total		***0.1200***		***240***	***0.0731***	***0.0092***		

Construction Hours

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

PM2.5 Fugitive Dust Construction Emissions for Modeling - Unmitigated

Construction Year	Activity	Area Source	PM2.5 Emissions (ton/year)	PM2.5 Emissions (lb/yr)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (g/s)	Modeled Area (m^2)	PM2.5 Emission Rate $g/s/m^2$
2016	Const-Area 1	CON1_FUG	0.0143	28.6	0.00871	1.10E-03	2,086	5.26E-07
2017	Const-Area 1	CON1_FUG	0.0081	16.2	0.00493	6.21E-04	2,086	2.97E-07
Total			***0.0224***	***44.8***	***0.0136***	***0.0017***		

Construction Hours

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

470 S Market, San Jose, CA - Project Construction Health Impact Summary

Maximum Impacts at Off-Site Residences

Construction Year	Unmitigated: Maximum Concentrations: Exhaust PM105/DPM ($\mu g/m^3$)	Unmitigated: Maximum Concentrations: Fugitive PM2.5 ($\mu g/m^3$)	Unmitigated: Cancer Risk (per million): Child	Unmitigated: Cancer Risk (per million): Adult	Unmitigated: Hazard Index (-)	Unmitigated: Maximum Annual PM2.5 Concentration ($\mu g/m^3$)
2016	0.0442	0.0144	7.25	0.13	0.009	0.059
2017	0.0704	0.0081	11.56	0.20	0.014	0.078
Total	-	-	**18.8**	**0.3**	-	-
Maximum Annual	0.0704	0.0144	-	-	**0.01**	**0.08**

470 S Market, San Jose, CA - Construction Impacts - Unmitigated Emissions
Maximum DPM Cancer Risk Calculations From Construction
Off-Site Residential Receptor Locations - 1.5 meters

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

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
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 $(\mu g/m^3)$
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

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

			Infant/Child - Exposure Information				Adult - Exposure Information					
			DPM Conc (ug/m3)		Age	Infant/Child	Modeled DPM Conc (ug/m3)		Age	Adult		
Exposure Year	**Exposure Duration (years)**	**Age**	**Year**	**Annual**	**Sensitivity Factor**	**Cancer Risk (per million)**	**Year**	**Annual**	**Sensitivity Factor**	**Cancer Risk (per million)**	**Fugitive PM2.5**	**Total PM2.5**
0	0.25	-0.25 - 0*	-	-	10	-	-	-	-	-	-	-
1	1	0 - 1	2016	0.0442	10	7.25	2016	0.0442	1	0.13	0.0144	0.059
2	1	1 - 2	2017	0.0704	10	11.56	2017	0.0704	1	0.20	0.0081	0.078
3	1	2 - 3		0.0000	3	0.00		0.0000	1	0.00		
4	1	3 - 4		0.0000	3	0.00		0.0000	1	0.00		
5	1	4 - 5		0.0000	3	0.00		0.0000	1	0.00		
6	1	5 - 6		0.0000	3	0.00		0.0000	1	0.00		
7	1	6 - 7		0.0000	3	0.00		0.0000	1	0.00		
8	1	7 - 8		0.0000	3	0.00		0.0000	1	0.00		
9	1	8 - 9		0.0000	3	0.00		0.0000	1	0.00		
10	1	9 - 10		0.0000	3	0.00		0.0000	1	0.00		
11	1	10 - 11		0.0000	3	0.00		0.0000	1	0.00		
12	1	11 - 12		0.0000	3	0.00		0.0000	1	0.00		
13	1	12 - 13		0.0000	3	0.00		0.0000	1	0.00		
14	1	13 - 14		0.0000	3	0.00		0.0000	1	0.00		
15	1	14 - 15		0.0000	3	0.00		0.0000	1	0.00		
16	1	15 - 16		0.0000	3	0.00		0.0000	1	0.00		
17	1	16-17		0.0000	1	0.00		0.0000	1	0.00		
18	1	17-18		0.0000	1	0.00		0.0000	1	0.00		
19	1	18-19		0.0000	1	0.00		0.0000	1	0.00		
20	1	19-20		0.0000	1	0.00		0.0000	1	0.00		
21	1	20-21		0.0000	1	0.00		0.0000	1	0.00		
22	1	21-22		0.0000	1	0.00		0.0000	1	0.00		
23	1	22-23		0.0000	1	0.00		0.0000	1	0.00		
24	1	23-24		0.0000	1	0.00		0.0000	1	0.00		
25	1	24-25		0.0000	1	0.00		0.0000	1	0.00		
26	1	25-26		0.0000	1	0.00		0.0000	1	0.00		
27	1	26-27		0.0000	1	0.00		0.0000	1	0.00		
28	1	27-28		0.0000	1	0.00		0.0000	1	0.00		
29	1	28-29		0.0000	1	0.00		0.0000	1	0.00		
30	1	29-30		0.0000	1	0.00		0.0000	1	0.00		
Total Increased Cancer Risk						**18.8**				**0.3**		

* Third trimester of pregnancy

470 S Market, San Jose, CA - Construction Impacts - Unmitigated Emissions
Maximum DPM Cancer Risk Calculations From Construction
Off-Site Residential Receptor Locations - 4.5 meters

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

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
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 $(\mu g/m^3)$
DBR = daily breathing rate (L/kg body weight-day)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

Values

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

			Infant/Child - Exposure Information				Adult - Exposure Information					
			DPM Conc (ug/m3)		Age	Infant/Child	Modeled DPM Conc (ug/m3)		Age	Adult		
Exposure Year	**Exposure Duration (years)**	**Age**	**Year**	**Annual**	**Sensitivity Factor**	**Cancer Risk (per million)**	**Year**	**Annual**	**Sensitivity Factor**	**Cancer Risk (per million)**	**Fugitive PM2.5**	**Total PM2.5**
0	0.25	-0.25 - 0*	-	-	10	-	-	-	-	-	-	-
1	1	0 - 1	2016	0.0412	10	6.77	2016	0.0412	1	0.12	0.0135	0.055
2	1	1 - 2	2017	0.0657	10	10.79	2017	0.0657	1	0.19	0.0076	0.073
3	1	2 - 3		0.0000	3	0.00		0.0000	1	0.00		
4	1	3 - 4		0.0000	3	0.00		0.0000	1	0.00		
5	1	4 - 5		0.0000	3	0.00		0.0000	1	0.00		
6	1	5 - 6		0.0000	3	0.00		0.0000	1	0.00		
7	1	6 - 7		0.0000	3	0.00		0.0000	1	0.00		
8	1	7 - 8		0.0000	3	0.00		0.0000	1	0.00		
9	1	8 - 9		0.0000	3	0.00		0.0000	1	0.00		
10	1	9 - 10		0.0000	3	0.00		0.0000	1	0.00		
11	1	10 - 11		0.0000	3	0.00		0.0000	1	0.00		
12	1	11 - 12		0.0000	3	0.00		0.0000	1	0.00		
13	1	12 - 13		0.0000	3	0.00		0.0000	1	0.00		
14	1	13 - 14		0.0000	3	0.00		0.0000	1	0.00		
15	1	14 - 15		0.0000	3	0.00		0.0000	1	0.00		
16	1	15 - 16		0.0000	3	0.00		0.0000	1	0.00		
17	1	16-17		0.0000	1	0.00		0.0000	1	0.00		
18	1	17-18		0.0000	1	0.00		0.0000	1	0.00		
19	1	18-19		0.0000	1	0.00		0.0000	1	0.00		
20	1	19-20		0.0000	1	0.00		0.0000	1	0.00		
21	1	20-21		0.0000	1	0.00		0.0000	1	0.00		
22	1	21-22		0.0000	1	0.00		0.0000	1	0.00		
23	1	22-23		0.0000	1	0.00		0.0000	1	0.00		
24	1	23-24		0.0000	1	0.00		0.0000	1	0.00		
25	1	24-25		0.0000	1	0.00		0.0000	1	0.00		
26	1	25-26		0.0000	1	0.00		0.0000	1	0.00		
27	1	26-27		0.0000	1	0.00		0.0000	1	0.00		
28	1	27-28		0.0000	1	0.00		0.0000	1	0.00		
29	1	28-29		0.0000	1	0.00		0.0000	1	0.00		
30	1	29-30		0.0000	1	0.00		0.0000	1	0.00		
Total Increased Cancer Risk						**17.6**				**0.3**		

* Third trimester of pregnancy

Attachment 2: S. Market Street/SR-82 Road Emissions and Risk Calculations

470 S Market, San Jose, CA
South Market Street (SR-82)
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)	Diesel ADT	Average Speed (mph)
NB-Market	Northbound S Market	N	2	698	44	13.3	3.4	197	30
SB-Market	Southbound S Market	S	2	698	44	13.3	3.4	197	30

2020 Hourly Diesel Traffic Volumes Per Direction and DPM Emissions - NB-Market

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	2.41%	5	0.0233	9	7.13%	14	0.0177	17	6.36%	13	0.0173
2	2.05%	4	0.0204	10	3.87%	8	0.0249	18	5.90%	12	0.0152
3	2.65%	5	0.0199	11	7.03%	14	0.0180	19	5.33%	11	0.0149
4	1.85%	4	0.0268	12	7.26%	14	0.0182	20	4.30%	8	0.0133
5	1.47%	3	0.0236	13	6.91%	14	0.0180	21	1.81%	4	0.0240
6	1.58%	3	0.0281	14	6.97%	14	0.0179	22	1.99%	4	0.0256
7	2.72%	5	0.0276	15	6.38%	13	0.0174	23	1.53%	3	0.0227
8	6.08%	12	0.0171	16	5.67%	11	0.0160	24	0.74%	1	0.0226
								Total		197	

2020 Hourly Diesel Traffic Volumes Per Direction and DPM Emissions - SB-Market

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	2.41%	5	0.0233	9	7.13%	14	0.0177	17	6.36%	13	0.0173
2	2.05%	4	0.0204	10	3.87%	8	0.0249	18	5.90%	12	0.0152
3	2.65%	5	0.0199	11	7.03%	14	0.0180	19	5.33%	11	0.0149
4	1.85%	4	0.0268	12	7.26%	14	0.0182	20	4.30%	8	0.0133
5	1.47%	3	0.0236	13	6.91%	14	0.0180	21	1.81%	4	0.0240
6	1.58%	3	0.0281	14	6.97%	14	0.0179	22	1.99%	4	0.0256
7	2.72%	5	0.0276	15	6.38%	13	0.0174	23	1.53%	3	0.0227
8	6.08%	12	0.0171	16	5.67%	11	0.0160	24	0.74%	1	0.0226
								Total		197	

470 S Market, San Jose, CA
South Market Street (SR-82)
PM2.5 & TOG Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2020

Group Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	ADT	Average Speed (mph)
NB-Market	Northbound S Market	N	2	698	44	13.3	1.3	11,336	30
SB-Market	Southbound S Market	S	2	698	44	13.3	1.3	11,336	30

2020 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - NB-Market

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.08%	123	0.0211	9	7.07%	802	0.0202	17	7.40%	839	0.0201
2	0.36%	41	0.0217	10	4.25%	482	0.0206	18	8.30%	941	0.0200
3	0.31%	36	0.0226	11	4.60%	521	0.0204	19	5.81%	659	0.0200
4	0.18%	20	0.0286	12	5.83%	661	0.0203	20	4.38%	496	0.0199
5	0.45%	51	0.0218	13	6.17%	699	0.0202	21	3.29%	373	0.0201
6	0.81%	92	0.0219	14	6.03%	684	0.0202	22	3.30%	374	0.0203
7	3.75%	425	0.0205	15	7.08%	803	0.0201	23	2.47%	281	0.0201
8	7.91%	897	0.0200	16	7.24%	820	0.0200	24	1.90%	216	0.0200
								Total		11,336	

2020 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - SB-Market

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.08%	123	0.0211	9	7.07%	802	0.0202	17	7.40%	839	0.0201
2	0.36%	41	0.0217	10	4.25%	482	0.0206	18	8.30%	941	0.0200
3	0.31%	36	0.0226	11	4.60%	521	0.0204	19	5.81%	659	0.0200
4	0.18%	20	0.0286	12	5.83%	661	0.0203	20	4.38%	496	0.0199
5	0.45%	51	0.0218	13	6.17%	699	0.0202	21	3.29%	373	0.0201
6	0.81%	92	0.0219	14	6.03%	684	0.0202	22	3.30%	374	0.0203
7	3.75%	425	0.0205	15	7.08%	803	0.0201	23	2.47%	281	0.0201
8	7.91%	897	0.0200	16	7.24%	820	0.0200	24	1.90%	216	0.0200
								Total		11,336	

470 S Market, San Jose, CA
South Market Street (SR-82)
Entrained PM2.5 Road Dust Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2020

Group Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	ADT	Average Speed (mph)
NB-Market	Northbound S Market	N	2	698	44	13.3	1.3	11,336	30
SB-Market	Southbound S Market	S	2	698	44	13.3	1.3	11,336	30

2020 Hourly Traffic Volumes Per Direction and Road Dust PM2.5 Emissions - NB-Market

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.08%	123	0.0153	9	7.07%	802	0.0153	17	7.40%	839	0.0153
2	0.36%	41	0.0153	10	4.25%	482	0.0153	18	8.30%	941	0.0153
3	0.31%	36	0.0153	11	4.60%	521	0.0153	19	5.81%	659	0.0153
4	0.18%	20	0.0153	12	5.83%	661	0.0153	20	4.38%	496	0.0153
5	0.45%	51	0.0153	13	6.17%	699	0.0153	21	3.29%	373	0.0153
6	0.81%	92	0.0153	14	6.03%	684	0.0153	22	3.30%	374	0.0153
7	3.75%	425	0.0153	15	7.08%	803	0.0153	23	2.47%	281	0.0153
8	7.91%	897	0.0153	16	7.24%	820	0.0153	24	1.90%	216	0.0153
								Total		11,336	

2020 Hourly Traffic Volumes Per Direction and Road Dust PM2.5 Emissions - SB-Market

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.08%	123	0.0153	9	7.07%	802	0.0153	17	7.40%	839	0.0153
2	0.36%	41	0.0153	10	4.25%	482	0.0153	18	8.30%	941	0.0153
3	0.31%	36	0.0153	11	4.60%	521	0.0153	19	5.81%	659	0.0153
4	0.18%	20	0.0153	12	5.83%	661	0.0153	20	4.38%	496	0.0153
5	0.45%	51	0.0153	13	6.17%	699	0.0153	21	3.29%	373	0.0153
6	0.81%	92	0.0153	14	6.03%	684	0.0153	22	3.30%	374	0.0153
7	3.75%	425	0.0153	15	7.08%	803	0.0153	23	2.47%	281	0.0153
8	7.91%	897	0.0153	16	7.24%	820	0.0153	24	1.90%	216	0.0153
								Total		11,336	

470 S Market, San Jose, CA

South Market Street (SR-82) Traffic Data and PM2.5 & TOG Emission Factors - 30 mph

Analysis Year = ***2020***

Vehicle Type	2011 Caltrans Number Vehicles (veh/day)	2020 Number Vehicles (veh/day)	2020 Percent Diesel	Number Diesel Vehicles (veh/day)	Vehicle Speed (mph)	Emission Factors: Diesel Vehicles DPM (g/VMT)	All Vehicles: Total PM2.5 (g/VMT)	All Vehicles: Exhaust PM2.5 (g/VMT)	Gas Vehicles: Exhaust TOG (g/VMT)	Gas Vehicles: Running TOG (g/VMT)
LDA	14,518	15,824	1.06%	168	30	0.0114	0.0197	0.0019	0.0204	0.044
LDT	5,513	6,009	0.17%	10	30	0.0156	0.0197	0.0020	0.0317	0.096
MDT	618	674	9.92%	67	30	0.0169	0.0236	0.0028	0.0635	0.185
HDT	152	165	90.12%	149	30	0.0281	0.0751	0.0252	0.1735	0.110
Total	20,800	22,672	-	394	30	-	-	-	-	-
Mix Avg Emission Factor						**0.01873**	**0.02021**	**0.00214**	**0.02474**	**0.06179**
Increase From 2011		1.09								
Vehicles/Direction		11,336		197						
Avg Vehicles/Hour/Direction		**472**		**8**						

Traffic Data Year = ***2011***

Caltrans 2011 AADT Data & 2010 Truck %s	Total	Total Truck	Truck by Axle: 2	3	4	5
SR-82 A Jct Rte 280	20,800	770	618	112	8	32
			80.30%	14.50%	1.00%	4.20%
Percent of Total Vehicles		3.70%	2.97%	0.54%	0.04%	0.16%

Traffic Increase per Year (%) = ***1.00%***

470 S Market, San Jose, CA
South Market Street (SR-82) Traffic Data and Entrained PM2.5 Road Dust Emission Factors

$E_{2.5} = [k(sL)^{0.91} \times (W)^{1.02} \times (1-P/4N) \times 453.59$

where:

$E_{2.5}$ = $PM_{2.5}$ emission factor (g/VMT)

k = particle size multiplier (g/VMT) [$k_{PM2.5} = k_{PM10}$ x (0.0686/0.4572) = 1.0 x 0.15 = 0.15 g/VMT][a]

sL = roadway specific silt loading (g/m^2)

W = average weight of vehicles on road (Bay Area default = 2.4 tons)[a]

P = number of days with at least 0.01 inch of precipitation in the annual averaging period

N = number of days in the annual averaging period (default = 365)

Notes: [a] CARB 2014, Miscellaneous Process Methodology 7.9, Entrained Road Travel, Paved Road Dust (Revised and updated, April 2014)

Road Type	Silt Loading (g/m^2)	Average Weight (tons)	County	No. Days ppt > 0.01"	$PM_{2.5}$ Emission Factor (g/VMT)
Major	0.032	2.4	Santa Clara	64	0.01528

SFBAAB[a]

Road Type	Silt Loading (g/m^2)
Collector	0.032
Freeway	0.02
Local	0.32
Major	0.032

SFBAAB[a]

County	>0.01 inch precipitation
Alameda	61
Contra Costa	60
Marin	66
Napa	68
San Francisco	67
San Mateo	60
Santa Clara	64
Solano	54
Sonoma	69

470 S Market, San Jose, CA - S Market (SR-82) DPM, PM2.5 & TOG TACs
CAL3QHCR Risk Modeling Parameters and Maximum Concentrations
3rd Floor Residences - 7.3 meter Receptor Heights

Receptor Information

Number of Receptors	190
Receptor Height =	1.5 meters
Receptor distances =	8 meter grid

Meteorological Conditions

BAAQMD Union City Hourly Met Data	1990-1994
Land Use Classification	urban
Wind speed =	variable
Wind direction =	variable

MEI Maximum Concentrations - Receptor Height = 1.5 m

Meteorological Data Year	DPM Concentration ($\mu g/m^3$) 2020	Gas Veh Exhaust TOG Concentration ($\mu g/m^3$) 2020	Gas Veh Evaporative TOG Concentration ($\mu g/m^3$) 2020
1991	0.0016	0.1088	0.2729
1992	0.0016	0.1088	0.2729
1993	0.0018	0.1196	0.3000
1994	0.0018	0.1207	0.3027
1995	0.0017	0.1116	0.2799
Average	**0.0017**	**0.1139**	**0.2857**
Maximum	**0.0018**	**0.1207**	**0.3027**

PM2.5 Concentrations

Meteorological Data Year	Maximum Total PM2.5 Concentration (µg/m3) 2020	Maximum Road Dust PM2.5 Concentration (µg/m3) 2020	Maximum Vehicle PM2.5 Concentration (µg/m3) 2020
1991	0.1564	0.0672	0.0892
1992	0.1564	0.0672	0.0892
1993	0.1719	0.0739	0.0980
1994	0.1735	0.0745	0.0989
1995	0.1604	0.0689	0.0915
Average	**0.2**	**0.1**	**0.1**
Maximum	**0.2**	**0.1**	**0.1**

Notes:
Maximum DPM & PM2.5 concentrations occur in the southeast corner of the residential area closest to S. Market Street

470 S Market, San Jose, CA - S Market (SR-82) Cancer Risks
On-Site Residential Receptors - 7.3 meter Receptor Heights
3rd Floor Residences - 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 $(mg/kg\text{-}day)^{-1}$

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 $(\mu g/m^3)$

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 $(mg/kg\text{-}day)^{-1}$

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

	Infant/Child			Adult
Age --> / Parameter	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 for infants and 80th percentile for children and adults

Road Traffic Cancer Risk by Year - Maximum Impact Receptor Location

				Maximum - Exposure Information				Cancer Risk (per million)			
					Annual Conc (ug/m3)						
Exposure Year	Year	Exposure Duration (years)	Age	Age Sensitivity Factor	DPM	TOG Exhaust	TOG Evaporative	DPM	TOG Exhaust	TOG Evaporative	Total
0	2018	0.25	-0.25 - 0*	10	0.0017	0.1139	0.2857	0.02	0.009	0.001	0.03
1	2018	1	1	10	0.0017	0.1139	0.2857	0.28	0.107	0.016	0.40
2	2019	1	2	10	0.0017	0.1139	0.2857	0.28	0.107	0.016	0.40
3	2020	1	3	3	0.0017	0.1139	0.2857	0.04	0.017	0.002	0.06
4	2021	1	4	3	0.0017	0.1139	0.2857	0.04	0.017	0.002	0.06
5	2022	1	5	3	0.0017	0.1139	0.2857	0.04	0.017	0.002	0.06
6	2023	1	6	3	0.0017	0.1139	0.2857	0.04	0.017	0.002	0.06
7	2024	1	7	3	0.0017	0.1139	0.2857	0.04	0.017	0.002	0.063
8	2025	1	8	3	0.0017	0.1139	0.2857	0.04	0.017	0.002	0.063
9	2026	1	9	3	0.0017	0.1139	0.2857	0.04	0.017	0.002	0.063
10	2027	1	10	3	0.0017	0.1139	0.2857	0.04	0.017	0.002	0.063
11	2028	1	11	3	0.0017	0.1139	0.2857	0.04	0.017	0.002	0.063
12	2029	1	12	3	0.0017	0.1139	0.2857	0.04	0.017	0.002	0.063
13	2030	1	13	3	0.0017	0.1139	0.2857	0.04	0.017	0.002	0.063
14	2031	1	14	3	0.0017	0.1139	0.2857	0.04	0.017	0.002	0.063
15	2032	1	15	3	0.0017	0.1139	0.2857	0.04	0.017	0.002	0.063
16	2033	1	16	3	0.0017	0.1139	0.2857	0.04	0.017	0.002	0.063
17	2034	1	17	1	0.0017	0.1139	0.2857	0.00	0.002	0.000	0.007
18	2035	1	18	1	0.0017	0.1139	0.2857	0.00	0.002	0.000	0.007
19	2036	1	19	1	0.0017	0.1139	0.2857	0.00	0.002	0.000	0.007
20	2037	1	20	1	0.0017	0.1139	0.2857	0.00	0.002	0.000	0.007
21	2038	1	21	1	0.0017	0.1139	0.2857	0.00	0.002	0.000	0.007
22	2039	1	22	1	0.0017	0.1139	0.2857	0.00	0.002	0.000	0.007
23	2040	1	23	1	0.0017	0.1139	0.2857	0.00	0.002	0.000	0.007
24	2041	1	24	1	0.0017	0.1139	0.2857	0.00	0.002	0.000	0.007
25	2042	1	25	1	0.0017	0.1139	0.2857	0.00	0.002	0.000	0.007
26	2043	1	26	1	0.0017	0.1139	0.2857	0.00	0.002	0.000	0.007
27	2044	1	27	1	0.0017	0.1139	0.2857	0.00	0.002	0.000	0.007
28	2045	1	28	1	0.0017	0.1139	0.2857	0.00	0.002	0.000	0.007
29	2046	1	29	1	0.0017	0.1139	0.2857	0.00	0.002	0.000	0.007
30	2047	1	30	1	0.0017	0.1139	0.2857	0.00	0.002	0.000	0.007
Total Increased Cancer Risk								**1.2**	**0.5**	**0.1**	**1.8**

* Third trimester of pregnancy

Attachment 3: Project Generator Emission Factors and Risk Modeling Calculations

470 South Market Street, San Jose, CA - Emergency Generator Criteria Pollutant and GHG Emissions

Analysis Year = 2018 **50 = Annual Days of Project Operation**

Off-Road Equipment Equipment Type	No. Units	Engine Age (years)	Engine Model Year	Daily Hours In Use	Days Per Year	Unit Annual Hours Use	Use Factor	Load Factor	Cumulative Hours Operation Per Unit	Engine (hp)	Fuel Type	Level of VDECS Used	Emission Factor (g/hp-hr) NOx	CO	ROG	PM10	PM2.5	SO2	CO2	Average Daily Emissions (lb/day) NOx	CO	ROG	PM10	PM2.5	SO2	CO2	Annual Emissions (ton/yr) NOx	CO	ROG	PM10	PM2.5	SO2	CO2
Project Operation																																	
Generator Sets	1	2	2016	1.0	50	50	1.00	0.49	100	805	ULSD	0	2.24	0.92	0.05	0.02	0.02	0.006	531.4	0.27	0.1	0.006	0.002	0.0019	0.001	63	0.049	0.020	0.001	0.0004	0.0003	0.0001	11.6
TOTAL	-			-	-	-	-	-	-	-	-		-	-	-	-				**0.27**	**0.1**	**0.006**	**0.002**	**0.0019**	**0.00**	**63**	**0.049**	**0.0**	**0.0**	**0.0004**	**0.0003**	**0.0001**	**11.6**

Emission Factors - Off-Road Compression Ignited Engines	NOx			CO			ROG			PM10			PM2.5			CO2			SO2
EF ID	ZH EF (g/hp-hr)	DR (g/hp-hr^2)	Fuel CF	ZH EF (g/hp-hr)	DR (g/hp-hr^2)	Fuel CF	ZH EF (g/hp-hr)	DR (g/hp-hr^2)	Fuel CF	ZH EF (g/hp-hr)	DR (g/hp-hr^2)	Fuel CF	ZH EF (g/hp-hr)	DR (g/hp-hr^2)	Fuel CF	ZH EF (g/hp-hr)	DR (g/hp-hr^2)	Fuel CF	(g/hp-hr)
ULSD10002016	2.36	3.00E-05	0.95	0.92	1.82E-05	1.00	0.05	1.17E-05	1.00	0.02	1.00E-06	0.85	0.02	1.00E-06	0.85	568.30	0.00E+00	0.94	0.01

Notes: ZH EF = Zero hour emission factor
DR = Deterioration rate
ULSD = Ultra low sulfur diesel (15 ppmw sulfur, 0.0015% sulfur)

Refs: CARB OFFFROAD2007 model (http://www.arb.ca.gov/msei/offroad/offroad.htm), December, 2006.
Stationary/Off-road engines ARB, "California's Emissions Inventory for Off-Road Large Compression-Ignited (CI) Engines (> 25 HP)" MAC#99-32

Plant #:
Plant Name:
Number of Sources:

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]		0.00E+00
BENZIDINE (AND ITS SALTS) values also apply to:		0.00E+00
Benzidine based dyes		0.00E+00
Direct Black 38		0.00E+00
Direct Blue 6		0.00E+00
Direct Brown 95 (technical grade)		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
Barium chromate2		0.00E+00
Calcium chromate2		0.00E+00
Lead chromate2		0.00E+00
Sodium dichromate2		0.00E+00
Strontium chromate2		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		0.00E+00
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:		0.00E+00
Lead acetate2		0.00E+00
Lead phosphate2		0.00E+00
Lead subacetate2		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:)		0.00E+00
Nickel acetate2		0.00E+00
Nickel carbonate2		0.00E+00
Nickel carbonyl2		0.00E+00
Nickel hydroxide2		0.00E+00
Nickelocene2		0.00E+00
NICKEL OXIDE2		0.00E+00
Nickel refinery dust from the pyrometallurgical process2		0.00E+00
Nickel subsulfide2		0.00E+00
p-NITROSODIPHENYLAMINE		0.00E+00
PARTICULATE EMISSIONS FROM DIESEL-FUELED ENGINES	1.90E-03	2.02E-06
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
Toluene diisocyantates		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:	2.02E-06

Plant #:
Plant Name:
Number of Sources:

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		0
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		0
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	0.0019	0.000717356
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-HEXACHLORODIBENZOFURAN2,7		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		0
SULFURIC ACID AND OLEUM		0
SULFURIC ACID		0
SULFUR TRIOXIDE		0
OLEUM		0
TOLUENE		0
Toluene diisocyantates		0
TOLUENE-2,4-DIISOCYANATE		0
TOLUENE-2,6-DIISOCYANATE		0
TRICHLOROETHYLENE		0
TRIETHYLAMINE		0
VINYL ACETATE		0
VINYLIDENE CHLORIDE (1,1-Dichloroethylene)		0
XYLENES (mixed isomers)		0
m-XYLENE		0
o-XYLENE		0
p-XYLENE		0
	TOTAL:	7.17E-04

Plant #:
Plant Name:
Number of Sources:

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		0
BENZYL CHLORIDE		0
CARBON DISULFIDE1		0
CARBON MONOXIDE		0
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		0
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		0
SULFURIC ACID AND OLEUM		0
SULFURIC ACID		0
SULFUR TRIOXIDE		0
OLEUM		0
TOLUENE		0
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:	0.00E+00

Plant #:
Plant Name:
Number of Sources:

Diesel PM Concentrations	Emissions (lbs/day)	M2.5 Concentration (ug/m3)
	1.90E-03	0.003668615
		0
		0
		0
		0
		0
		0
		0
		0
		0
		0
		0
		0
TOTAL:		0.003668615