Appendix B:
Air Quality Assessment

THIS PAGE INTENTIONALLY LEFT BLANK

LASSEN ROAD PROPERTY RESIDENTIAL PROJECT IN LIVERMORE, CALIFORNIA

AIR QUALITY ASSESSMENT

January 17, 2018

Prepared for:

Mr. Adam Tennant
WestGate Ventures
2551 San Ramon Valley Blvd., Suite 204
San Ramon, CA 94583
atennant@westgateventures.net

Prepared by:

James A. Reyff
and William Popenuck

ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality
505 Petaluma Boulevard South
Petaluma, CA 94952
(707) 766-7700

Project 17-205

Introduction

This report provides the results of an assessment of potential air quality impacts for the Lassen Road Property project proposed north of Interstate 580 (I-580) and west of First Street/ Springtown Boulevard in Livermore, California. The proposed project would construct 196-unit, multi-family homes on the 35 acre site. Air quality impacts are addressed with respect to the applicable Californian Environmental Quality Act (CEQA) Checklist questions that require quantified analyses. In addition, the report evaluates the effects for existing sources of air pollutants or contaminants upon future project residents that are considered sensitive receptors. Finally, for informational purposes, the project computes the greenhouse gas emissions associated with construction and operation of the project.

Project Description

The project proposes to construct 196 townhomes, in three different communities with a 35-acre site in the City of Livermore's Springtown neighborhood. The proposed project would be built within the city's Urban Growth Boundary and includes the dedication of over 20 acres of open space. The site's existing General Plan designations include Low Intensity Industrial, Service Commercial, and Limited Agriculture.

Air Quality Analysis

The primary source of air pollutant emissions from the project is traffic. Project construction activity would generate temporary emissions that could affect local sensitive receptors (i.e., residents) and regional air quality. Sources of air pollution and toxic air contaminants near the site could affect new project residents.

This analysis evaluates the potential air quality impacts from construction and operation of the proposed project that includes site grading/preparation and construction of buildings and infrastructure and then new motor vehicle trips. The air quality impacts were evaluated in terms of construction and operational impacts to air quality with the primary focus on evaluating the effects of future project-related emissions on regional air quality and on local sensitive receptors. This analysis was conducted following guidance provided by the Bay Area Air Quality Management District (BAAQMD).[1]

Setting

The project is located in the eastern portion of Alameda 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 ($PM_{2.5}$).

Pollutants

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 and this includes the Livermore Valley. High ozone levels aggravate respiratory and cardiovascular diseases, reduced lung function, and increase coughing and chest discomfort.

[1] Bay Area Air Quality Management District, 2011. BAAQMD CEQA Air Quality Guidelines. May.

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 (TAC) 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 listed above. 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 and the U.S. EPA have adopted and implemented a number of regulations and emission standards for stationary and mobile sources to reduce emissions of diesel particulate matter (DPM). These include emission standards for off-road diesel engines, including diesel generators, and regulatory programs that affect medium and heavy-duty diesel trucks that represent the bulk of DPM emissions from California highways.

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: infants, children under 16, the elderly over 65, athletes, and people with cardiovascular and chronic respiratory diseases. These groups are classified as sensitive receptors. Locations that may contain a high concentration of these sensitive population groups include residential areas, hospitals, daycare facilities, elder care facilities, elementary schools, and parks. The closest sensitive receptors to the proposed project site are at the KinderCare Preschool on Lassen Road, adjacent to the northeastern project site boundary, where infants and children are present throughout the year. Additional sensitive receptors are the existing residences to the north and northeast, about 200 feet and further away from the site. The project residents are assumed to be sensitive receptors.

Sources of Nearby Air Pollutant and TAC Emissions

Figure 1 depicts the area within1,000 feet of the project site. Within this area, there is Interstate 580, First Street and several stationary sources permitted by BAAQMD. Interstate 580 is within about 200 feet and is the primary source of TAC and PM2.5 emissions. First Street is over 500 feet southeast of the site. Several stationary sources permitted by BAAQMD are identified in Figure 1 and range is distance from 500 feet to 970 feet or further from the site. Note that the locations depicted on Figure 1 of each source has been corrected from those based on BAAQMD tools.

Figure 1– Project Site, Influence Area and Nearest Sensitive Receptors

BAAQMD and Significance Thresholds

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

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). In response to legal challenges, BAAQMD updated the significance thresholds in 2017. These are summarized in Table 1. Note that the California Supreme Court ruled that CEQA generally does not require an analysis of the effects of existing environmental conditions (e.g., air quality) on a project unless the project would exacerbate those conditions somehow through its construction and/or operation. However, the effect of existing sources of TAC and PM2.5 emissions on the project and recommendations to reduce impacts are included in this report.

[2] Bay Area Air Quality Management District. 2011. BAAQMD CEQA Air Quality Guidelines. May.

Table 1. Air Quality Significance Thresholds

Criteria Air Pollutant	Construction Thresholds	Operational Thresholds	
	Average Daily Emissions (lbs./day)	**Average Daily Emissions (lbs./day)**	**Annual Average Emissions (tons/year)**
ROG	54	54	10
NO_x	54	54	10
PM_{10}	82 (Exhaust)	82	15
$PM_{2.5}$	54 (Exhaust)	54	10
CO	Not Applicable	9.0 ppm (8-hour average) or 20.0 ppm (1-hour average)	
Fugitive Dust	Construction Dust Ordinance or other Best Management Practices	Not Applicable	
Health Risks and Hazards	**Single Sources Within 1,000-foot Zone of Influence**	**Combined Sources (Cumulative from all sources within 1,000-foot zone of influence)**	
Excess Cancer Risk	>10 per one million	>100 per one million	
Hazard Index	>1.0	>10.0	
Incremental annual $PM_{2.5}$	>0.3 µg/m^3	>0.8 µg/m^3	
Greenhouse Gas Emissions			
Land Use Projects – direct and indirect emissions	Compliance with a Qualified GHG Reduction Strategy OR 1,100 metric tons annually or 4.6 metric tons per capita (for 2020) and adjusted to 2.6 metric tons per capita (for 2030)*		

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. GHG = greenhouse gases.

*BAAQMD does not have a recommended post-2020 GHG threshold.

Note that BAAQMD's recommended GHG threshold of 1,100 metric tons or 4.6 metric tons per capita was developed based on meeting the 2020 GHG targets set in the scoping plan that addressed AB 32. Development of the project would occur beyond 2020, so a threshold that addresses a future target is appropriate. The basis of the BAAQMD thresholds were used to develop plan level thresholds for 2040. Although BAAQMD has not published a quantified threshold for 2030 yet, this assessment uses a "Substantial Progress" efficiency metric of 2.6 MT CO2e/year/service population. This is calculated for 2030 based on the GHG reduction goals of the new SB 32 Scoping Plan developed by CARB that takes into account the 1990 inventory and the projected 2030 statewide population and employment levels.[3]

[3] Association of Environmental Professionals, 2016. *Beyond 2020 and Newhall: A Field Guide to New CEQA Greenhouse Gas Thresholds and Climate Action Plan Targets for California*. April.

Impacts and Mitigation

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

The Bay Area is considered a nonattainment 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, PM_{10} and $PM_{2.5}$, BAAQMD has established thresholds of significance for air pollutants. 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.

Both construction and operational emissions were computed using the California Emissions Estimator Model, Version 2016.3.2 (CalEEMod). The project type and size were input to the CalEEMod model, which relied primarily on default assumptions for Alameda County. The land uses input was 196 "Condo/Townhouse" dwelling units, on a 13-acre site.

Construction Period Emissions

CalEEMod was used to compute construction emissions that include various types of residential construction across the site. A provided construction schedule and projected equipment usage were provided to input to the model. Since this schedule and list were incomplete, CalEEMod model default assumptions were used to fill in data gaps. Inputs to the CalEEMod model are summarized as follows (CalEEMod output files and provided construction assumptions are included as *Attachment 1*):

Schedule

Construction is planned to occur all at once, beginning in mid-2019 and be completed in 2020, a total of 17 months or 375 workdays. This schedule assumed that the entire project was constructed all at once in 7 phases: Demolition (minor), Site Preparation, Grading, Trenching, Exterior Building Construction, Paving, and Interior Building Construction.

Construction Equipment

Equipment type, quantity, number of days in use, average hours of use per day (of use) were provided for each phase, which were based on CalEEMod default assumptions. The average hours per day were input to the model as the total number of hours for each phase divided by the number of workdays in that phase.

Truck and Worker Travel

Worker and vendor travel is based on the CalEEMod default values, which assign a daily rate for each phase. CalEEMod also computes the number of haul trips that are based on the amount of demolition and soil material to be imported or exported from the site. Since the site would move 140,000 cubic yards of material on site (no import or export), a trip distance of one mile was used.

CalEEMod Construction Modeling Results

CalEEMod provided construction emissions in tons per year. Average daily emissions were computed by dividing the emissions by the number of workdays (i.e., 375). Total construction emissions from full build out of the project are shown in *Table 2*.

Table 2. Lassen Road Project Construction Period Emissions

Description	ROG Emissions	NOx Emissions	PM10 Exhaust Emissions	PM2.5 Exhaust Emissions
Project Build Out	3.09 tons	8.60 tons	0.29 tons	0.27 tons
Daily Project Emissions - Assuming 375 days	16 lbs/day	46 lbs/day	2 lbs/day	2 lbs/day
BAAQMD Thresholds	*54lbs/day*	*54lbs/day*	*82lbs/day*	*54lbs/day*
Significant?	***No***	***No***	***No***	***No***

Construction Fugitive Dust

During grading and construction activities, dust would be generated. Most of the dust would result during grading activities. The amount of dust generated would be highly variable and is dependent on the size of the area disturbed at any given time, amount of activity, soil conditions and meteorological conditions. Nearby areas could be adversely affected by dust generated during construction activities. Nearby land uses are primarily commercial and office uses that are separated by roadways or open areas. The BAAQMD CEQA Air Quality Guidelines consider these impacts to be less than significant if best management practices are employed to reduce these emissions. This impact is considered less-than-significant with implementation of *Mitigation Measures AQ-1*.

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

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

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.

2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.

3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.

4. All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph).

5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.

6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.

7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.

8. Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.

Effectiveness of Mitigation Measure AQ-1: According to the BAAQMD CEQA Air Quality Guidelines, incorporation of these measures would be considered Best Management Practices for controlling fugitive PM10 and $PM_{2.5}$ emissions and the emissions would be considered less than significant as quantified emission thresholds are not used for these types of emissions. The Guidelines also indicate that these measures are anticipated to reduce on-site exhaust emissions by 5 percent.

Operational Emissions

CalEEMod provided emissions for operation that primarily includes traffic and energy usage (i.e., natural gas usage). *Table 3* provides a summary of the operational emissions. Since the site is undeveloped, there are no existing emissions from the project site. Therefore, the modeled emissions shown in *Table 3* represent net-new emissions caused by the project. Total daily and annual emissions from operation of the project would not exceed any of the significance thresholds. The impact is considered a *less than significant*.

Table 3. Lassen Road Project Operation Period Emissions

Description	ROG Emissions	NOx Emissions	PM10 Emissions	PM2.5 Emissions
Project Build Out	1.92 tons	2.30 tons	0.99 tons	0.29 tons
Average Daily Emissions	11 lbs/day	13 lbs/day	5 lbs/day	2 lbs/day
BAAQMD Thresholds	*54lbs/day*	*54lbs/day*	*82lbs/day*	*54lbs/day*
Significant?	***No***	***No***	***No***	***No***

Note: Average daily emissions assume 365 days operation per year.

Impact: Violate any air quality standard or contribute substantially to an existing or projected air quality violation?

As described above, emissions of air pollutants or their precursors associated with the project were computed and compared to relevant significance thresholds. These include precursors to ozone and particulate matter in the form of PM10 and $PM_{2.5}$. Emissions of these pollutants or precursors that would exceed the thresholds are considered to contribute substantially to an existing or projected air quality violation.

As described above, emissions of ozone precursors and particulate matter would not exceed the significance thresholds. Increased intersection congestion can lead to increased localized carbon monoxide or CO concentrations (hot spots) in the vicinity of the intersection. Typically, there needs to be a substantial increase in the number of vehicles accessing an intersection and a decrease in the intersection level of service (LOS) in order for there to be elevated CO concentrations of concern. BAAQMD has provided screening guidance to assess whether a project might cause or contribute to a potential exceedance of an ambient air quality standard for CO. BAAQMD predicts that traffic at project-affected intersections would have to exceed 44,000 vehicles per hour. The project would not cause or

contribute to CO exceedances since the traffic at affected intersections would be well below the BAAQMD screening criteria. Note that the Bay Area, as a whole, is considered attainment for CO and has not recorded an exceedance of a standard in over 20 years.

Since the project would have emissions that do not exceed the significance thresholds and traffic would not cause or contribute to exceedances of the CO ambient air quality standards, this impact is considered *less than significant.*

Impact: Expose sensitive receptors to substantial pollutant concentrations from construction activities?

The proposed project would be a source of air pollutant and TAC emissions during project construction. Project emissions of criteria air pollutants are addressed above. This impact addresses emissions of TACs and $PM_{2.5}$ that could adversely affect sensitive receptors.

The BAAQMD CEQA Air Quality Guidelines considers exposure of sensitive receptors to air pollutant levels that result in an unacceptable cancer risk, increased $PM_{2.5}$ concentrations or hazard to be significant. BAAQMD recommends a 1,000-foot zone of influence around project boundaries, as shown in *Figure 1*. Project operation would not be a localized source of TACs or $PM_{2.5}$, and therefore, operational health risks are not quantified. Temporary construction activities are a source of TACs and $PM_{2.5}$ from diesel exhaust emitted on and near the site. These impacts are addressed.

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 $PM_{2.5}$[4]. The closest sensitive receptors to the project site are the single-family homes to the north of the project (see *Figure 1 and 2*). Emissions and dispersion modeling was conducted to predict the off-site DPM and PM2.5 concentrations resulting from project construction, so that lifetime cancer risks and non-cancer health effects could be evaluated.

<u>On-Site Construction TAC Emissions</u>

Construction period emissions were computed using CalEEMod along with projected construction activity, as described above. The CalEEMod model provided total annual PM_{10} exhaust emissions (assumed to be diesel particulate matter or DPM) for the off-road construction equipment used for construction of the project and for the exhaust emissions from on-road vehicles (haul trucks, vendor trucks, and worker vehicles) of 0.2718 tons (544 pounds) over the construction period. A trip length of one mile was used to represent vehicle travel while at or near the construction site. For modeling purposes, it was assumed that these emissions from on-road vehicles would occur at the construction site. Fugitive dust $PM_{2.5}$ emissions were also computed and included in this analysis. The model predicts emissions of 0.1531 tons (306 pounds) of fugitive $PM_{2.5}$ over the construction period.

Dispersion Modeling

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

The U.S. EPA AERMOD dispersion model was used to predict concentrations of DPM and $PM_{2.5}$ concentrations at existing sensitive receptors (preschool infants and children, and nearby 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[5]. The AERMOD modeling utilized eight area sources to represent the on-site construction emissions, four for exhaust emissions and four 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 sources. The elevated source height reflects the height of the equipment exhaust pipes plus an additional distance for the height of the exhaust plume above the exhaust pipes to account for plume rise of the exhaust gases. For modeling fugitive $PM_{2.5}$ emissions, a near-ground level release height of 2 meters (6.6 feet) was used for the area sources. 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 locations where health impacts were evaluated.

The modeling used a five-year data set (2009-2013) of hourly meteorological data from the Livermore Municipal Airport that was prepared for use with the AERMOD model by CARB for use in health risk assessments. Annual DPM and $PM_{2.5}$ concentrations from construction activities during the 2019-2020 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) were used to represent the breathing heights of residents in nearby single-family homes and townhomes. Receptor heights of 1.0 meter (3.3 feet) were used to represent the breathing heights of infants and children at the KinderCare Preschool.

The maximum-modeled DPM concentration occurred at a receptor in the KinderCare Preschool area northeast of the construction site. The maximum $PM_{2.5}$ concentration occurred at the same location. The maximum residential DPM and $PM_{2.5}$ concentrations occurred at the closest residence north of the construction site. The locations where the maximum $PM_{2.5}$ and DPM concentrations (and maximum cancer risk) occurred for residential and preschool infant exposures are identified on *Figure 2*.

Construction Health Risk Impacts

Results of this assessment are provided in Table 4. The health risks impacts was computed using modeled TAC and $PM_{2.5}$ concentrations and the methods and exposure parameters described in *Attachment 2*. The maximum excess preschool infant cancer risk from these construction activities would be 27.5 in one million for an infant exposure. The maximum excess residential cancer risks from these construction activities would be 9.3 in one million for an infant exposure and 0.2 in one million for an adult exposure. Residential excess cancer risks would not exceed the BAAQMD significance threshold of 10 in one million. The maximum preschool infant excess cancer risk would exceed the BAAQMD significance threshold of 10 in one million and would be considered a *significant impact*.

The maximum-modeled annual $PM_{2.5}$ concentration, which is based on combined exhaust and fugitive dust emissions, was 0.23 $\mu g/m^3$, occurring at the KinderCare Preschool. This maximum annual $PM_{2.5}$ concentration would not exceed the BAAQMD significance threshold of 0.3 $\mu g/m^3$.

The maximum modeled annual residential DPM concentration (i.e., from construction exhaust) was 0.1024 $\mu g/m^3$. The maximum computed HI based on this DPM concentration is less than 0.02, which is much lower than the BAAQMD significance criterion of a HI greater than 1.0.

[5] Bay Area Air Quality Management District (BAAQMD), 2012, Recommended Methods for Screening and Modeling Local Risks and Hazards, Version 3.0. May 2011.

Mitigation Measure AQ-2: Use Construction equipment that has low diesel particulate matter exhaust emissions.

Develop a plan demonstrating that the off-road equipment used to on-site to construct the project would achieve a fleet-wide average of at least 63 percent reduction in exhaust PM_{10} emissions. One feasible plan to achieve this reduction would include the following:

- All mobile and portable diesel-powered off-road equipment larger than 25 horsepower and operating on the site for more than two days continuously shall meet, at a minimum, U.S. EPA particulate matter emissions standards for Tier 2 engines or equivalent and include diesel particulate matter filters that are equivalent to CARB-certified Level 3 Diesel Particulate Filters[1] (note that meeting U.S. EPA Tier 4 engine standards would suffice);

Note that the construction contractors could use other measures to minimize construction period DPM emission to reduce the estimated cancer risk below the thresholds. The use of equipment that includes alternatively-fueled equipment (i.e., non-diesel) would meet this requirement. Other measures may be the use of 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.

Effectiveness of Mitigation Measure AQ-2: The CalEEMod model was used to predict mitigated exhaust emissions, assuming Tier 2 engines with CARB Level 3 diesel particulate matter filters. These emissions were used in dispersion modeling to compute mitigated cancer risk and annual PM2.5 concentrations. The maximum increased cancer risk for an infant at the KinderCare Preschool would be reduced to 3.1 in one million with mitigation. The maximum residential child cancer risk would be reduced to 1.1 in one million.

Cumulative-Source Impacts

The cumulative impacts of TAC emissions from construction of the project combined with nearby TAC and PM2.5 sources on the construction MEI have been summarized in Table 4. As shown in Table 4, the sum of impacts from combined sources at the construction MEI would be below the thresholds of significance. Note that without mitigation, construction would have cancer risk impacts above the thresholds at the KinderCare Preschool.

Table 4. Impacts from Combined Sources at Construction MEI

Source	Maximum Cancer Risk (per million)	Hazard Index	$PM_{2.5}$ concentration ($\mu g/m^3$)
Project Construction			
-Unmitigated	27.5 (infant)	.02	0.23
-Mitigated	3.1 (infant)	<0.01	0.07
I-580 traffic (500 feet south) using BAAQMD Google Earth Screening Tool – Link 608 (6ft elevation)	<38	<0.03	<0.23
First Street/Springtown Blvd (200 feet north)	<3.8	<0.01	0.0
Plant G8281 Springtown Gasoline 909 Blue Bell Drive – *Stationary Source Tool - Gas Station Distance Multiplier* at 400 feet	<1.3	0.0	0.0
Plant G8949 Unocal #6034 4700 First Street - *Stationary Source Tool - Gas Station*	<0.6	0.0	0.0

[1] See http://www.arb.ca.gov/diesel/verdev/vt/cvt.htm

Distance Multiplier at >1,000 feet			
Plant 15852 Target Corporation T0828 – Generator 4300 Las Positas Road - *Stationary Source Tool - Diesel Engine Distance Multiplier* at >1,000 ft	0.0	0.0	0.0
Combined Sources *-Unmitigated* *-Mitigated*	<71.2 <46.8	<0.06 <0.07	0.46 0.30
BAAQMD Threshold – Combined Sources	***100***	***10.0***	***0.8***

Figure 2. Project Construction Site, Area Sources Used for Modeling, and Locations of Off-Site Sensitive Receptors and Maximum TAC and $PM_{2.5}$ Impacts

Impact 5: Create objectionable odors affecting a substantial number of people?

The project would generate localized emissions of diesel exhaust during construction equipment operation and truck activity. These emissions may be noticeable from time to time by adjacent receptors. However, they would be localized and are not likely to adversely affect people off site by resulting in confirmed odor complaints. The project would not include any sources of significant odors that would cause complaints from surrounding uses. This would be a *less-than-significant impact.*

On-Site Community Risk Impacts

This section describes the effects of nearby air pollutant and contaminant sources upon the project site. Due to a recent Supreme Court decision regarding BAAQMD's CEQA Air Quality Guidelines, this is not addressed as a CEQA-related air quality issue. The 2017 version of the CEQA Guidelines provide guidance to address this issue for lead agencies. Sources of TAC emissions located within 1,000 feet of the project site shown on the aerial in *Figure 1* were analyzed. These include Interstate 580, local high-volume roadways and stationary sources permitted by BAAQMD. *Table 5* summarizes the community risk posed by each source. The levels shown in *Table 5* are the maximum level that would occur anywhere on the project site from each source.

Table 5. Community Risk Impacts from TAC Sources Affecting On-Site Sensitive Receptors

Source	Maximum Cancer Risk (per million)	Maximum Annual $PM_{2.5}$ Concentration ($\mu g/m^3$)	Maximum Hazard Index
Highways			
I-580 Refined Roadway Modeling using AERMOD – 189,000 ADT ADT source: Caltrans	20.3	0.70	<0.01
Local High-Volume Roadways			
Springtown/First Street Roadway Screening Calculator at 600 feet east - 32,000 ADT ADT source: First Street, south of Southfront, Livermore ADT data rounded up from 31,833 to 32,000 (note Springtown Blvd. has lower ADT)	1.6	0.04	<0.01
Permitted Stationary Sources			
Plant G8281 Sprintown Gasoline 909 Blue Bell Drive – *Stationary Source Tool - Gas Station Distance Multiplier* at 900 feet	0.4	0.00	0.00
Plant G8949 Unocal #6034 4700 First Street - *Stationary Source Tool - Gas Station Distance Multiplier* at 1,000 feet	0.6	0.00	0.00
Plant 15852 Target Corporation T0828 – Generator 4300 Las Positas Road *Stationary Source Tool - Diesel Engine Distance Multiplier* at 450 ft	0.0	0.00	0.00
Combined Total*	<22.9*	<0.74*	<0.02*

*Note that combined total assumes that the maximum risk at the project site from each source occurs at the same place. This results in an overestimate because the maximum impacts occur at different locations across the site. This approach is appropriate to identify if potentially significant combined risks would occur.

Interstate 580

I-580 is about 100 to 900 feet south of the project site. TAC emissions from traffic include DPM, particularly from trucks, and organic TAC compounds from gasoline-fueled vehicles. As recommended by BAAQMD, in addition to DPM, TOG emissions from vehicle exhaust and running evaporative losses from gasoline vehicles, which are considered organic TAC emissions, were used to evaluate cancer risks and non-cancer health effects.[6] Vehicle $PM_{2.5}$ emissions, which include exhaust emissions and $PM_{2.5}$ emissions generated from tire and brake wear and roadway dust, from all vehicles (diesel- and gasoline-fueled) were also evaluated for potential health effects. A review of the traffic information reported by California Department of Transportation (Caltrans) for 2016 indicates that in the vicinity of the project

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

area, I-280 has an ADT of 189,000.[7] About 12.2 percent of these trips are made by trucks, with about 10.0 percent of these trucks being heavy duty trucks.

Traffic Emissions Modeling

Vehicle emissions were calculated using emission factors for traffic on I-580 using CARB's EMFAC2014 model. Default EMFAC2014 vehicle model year distributions for Alameda County were used in calculating emissions for 2021. Average daily traffic volumes and truck percentages were based on Caltrans data for I-580 for 2016. Traffic volumes were assumed to increase 1 percent per year. Average hourly traffic distributions for Alameda County roadways were developed using the EMFAC model,[8] which were then applied to the ADT volumes to obtain estimated hourly traffic volumes and emissions for I-580. The modeling was conducted assuming emissions for the year 2021. Year 2021 would be the first full year of project occupancy and emissions for 2021 were conservatively assumed as being representative of future conditions over the time period that cancer risks are evaluated (30 years) since overall vehicle emissions and, in particular, diesel truck emissions will decrease in the future.

For all hours of the day, other than during peak a.m. and p.m. periods, an average speed of 65 miles-per-hour (mph) was assumed for all vehicles. Based on traffic data from the Alameda County Transportation Commission's 2016 Level of Service Monitoring Report, traffic speeds during the peak a.m. and p.m. periods were identified.[9] For a 2-hour period during the peak a.m. period an average travel speed of 25 mph was used for westbound traffic and the average free-flow travel speed was used for eastbound traffic. For the peak p.m. period, the average free-flow travel speed was used for westbound traffic and an average travel speed of 40 mph was used for southbound traffic

Dispersion Modeling

Dispersion modeling of TAC and $PM_{2.5}$ emissions was conducted using the U.S. EPA AERMOD model, which is recommended by the BAAQMD for this type of analysis. East and westbound traffic on I-580 within about 1,000 feet of the project site were evaluated. A five-year data set (2009-2013) of hourly meteorological data from the Livermore Municipal Airport prepared for use with the AERMOD model by CARB for use in health risk assessments was used for the modeling. Other inputs to the model included road geometry and elevations, hourly traffic emissions, and receptor locations and elevations.

The modeling used receptors placed at the locations of the residential units of the proposed project. Receptor heights of 1.5 meters (5 feet) were used to represent the breathing heights of residents. Figure 3 shows the project site, roadway segments modeled, and residential receptors used in the modeling.

Computed Cancer and Non-Cancer Health Impacts

The modeled TAC and $PM_{2.5}$ concentrations from I-580 were used to assess impacts at the project site. The maximum increased lifetime cancer risk and annual $PM_{2.5}$ concentrations for new residents at the project site from I-580 are shown in Table 5. Figure 4 shows the computed lifetime cancer risk as residential locations across the site. Modeled cancer risks range from 20.3 in one million to a 2.0 per million. Figure 5 shows the annual $PM_{2.5}$ concentrations across the site, which range from 0.70 to 0.07 $\mu g/m^3$. The portion of the site that is within about 350 to 400 feet of I-580 would have cancer risk and $PM_{2.5}$ concentrations that exceed the recommended thresholds (i.e., cancer risk > 10.0 per million and annual $PM_{2.5}$ concentrations > 0.3 $\mu g/m^3$). The health risks impacts were computed using modeled TAC and $PM_{2.5}$ concentrations and the methods and exposure parameters described in *Attachment 2*.

[7] California Department of Transportation. 2017. *2016 Annual Average Daily Truck Traffic on California State Highways*

[8] The Burden output from EMFAC2007, CARB's previous version of the EMFAC model, was used for this since the current web-based version of EMFAC2014 does not include Burden type output with hour by hour traffic volume information.

[9] Alameda County Transportation Commission. *2016 Level of Service Monitoring on the Congestion management Program Roadway Network.* November 2014.

Figure 3. Project Site, Roadway Links, and Project Residential Receptor Locations

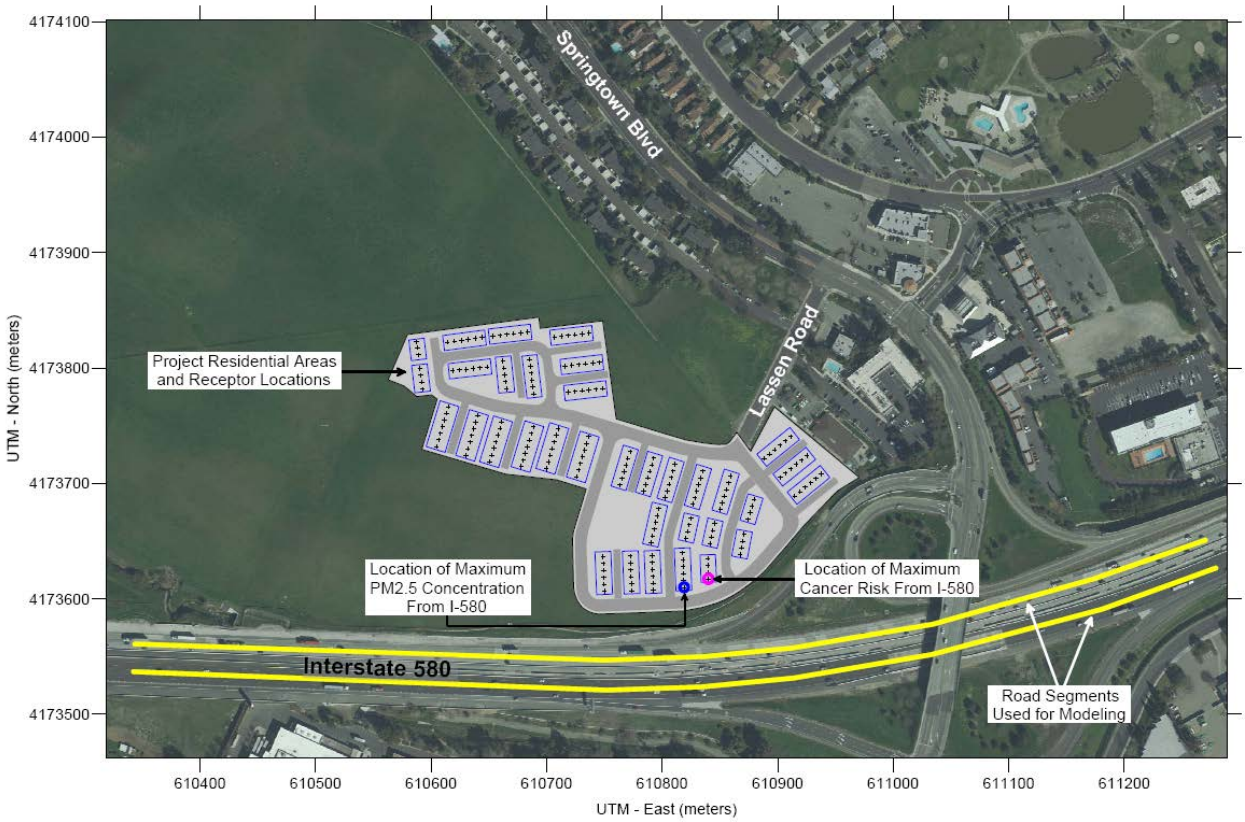


Figure 4. Increased Cancer Risks (per million) in Future Project Residential Areas

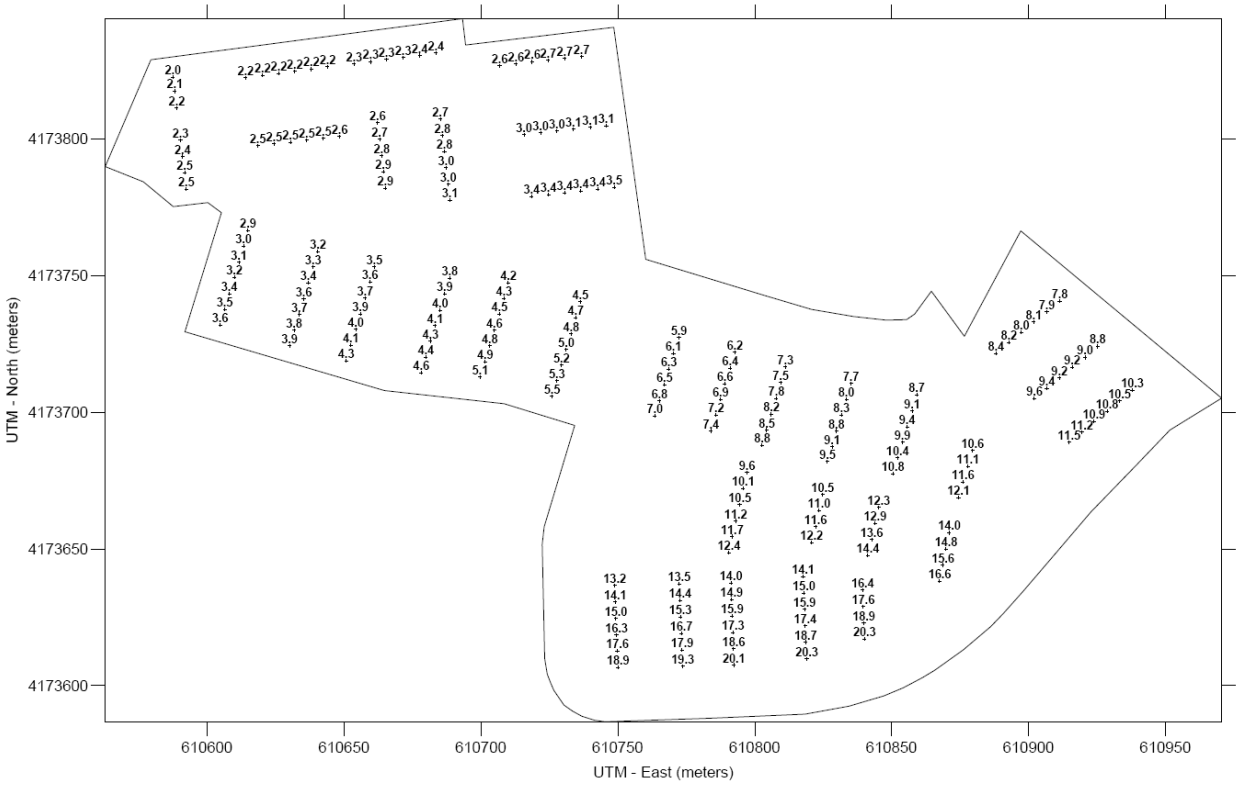
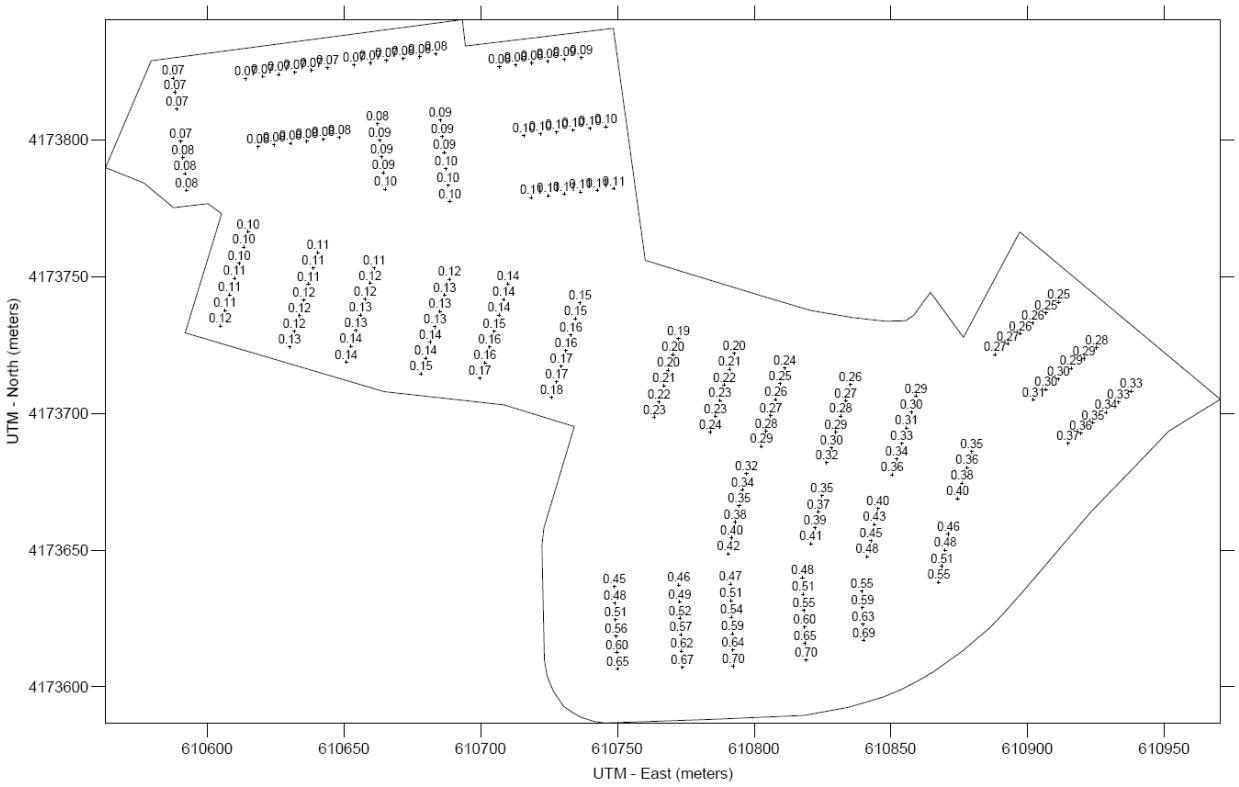


Figure 5. $PM_{2.5}$ Concentrations (µg/m^3) in Future Project Residential Areas



Local Roadways

For local roadways, BAAQMD has provided a screening calculator to determine if roadways with traffic volumes of over 10,000 vehicles per day may have a significant effect on a proposed project. Two local roadways appear to affect the project site. These include Springtown Blvd/ First Street. Inputs to the screening calculator include county, roadway orientation, side of the roadway the receptor is located, distance from the edge of the roadway, and the average daily traffic volume or ADT.

Two adjustments were made to the cancer risk predictions made by this calculator: (1) adjustment for latest vehicle emissions rates and (2) adjustment of cancer risk to reflect new OEHHA guidance described above. The calculator uses EMFAC2011 emission rates for the year 2014. Overall, emission rates will decrease by the time the project is constructed and occupied. The project is not likely to be occupied prior to 2018. In addition, a new version of the emissions factor model, EMFAC2014 is available. This version predicts lower emission rates. An adjustment factor of 0.5 was developed by comparing emission rates of total organic gases (TOG) for running exhaust and running losses developed using EMFAC2011 for year 2014 and those from EMFAC2014 for year 2018[10]. The predicted cancer risk was then adjusted using a factor of 1.3744 to account for new OEHHA guidance. This factor was provided by BAAQMD for use with their CEQA screening tools that are used to predict cancer risk[11].

The following inputs were used to model nearby roadways using the BAAQMD *Roadway Screening Analysis Calculator* for Alameda County:

[10] EMFAC2014 produces emission rates for 2018 that are 54 percent less for exhaust $PM_{2.5}$ and 44 percent less for total organic gases than EMFAC2011 produces for the year 2014.
[11] Email from Virginia Lau, BAAQMD to Bill Popenuck of Illingworth & Rodkin, Inc, dated November 15, 2015.

- First Street was modeled as north-south roadway north of the project site with the closest potential residence at 600 feet east of the roadway edge. The ADT was determined from the *City of Livermore – 2012/13 Summary ADT Counts*[12]. The ADT for the First Street roadway segment south of Southfront Road is 31,833 vehicles. This value was rounded up to 32,000 ADT for this analysis.

Potential cancer risk, annual $PM_{2.5}$ concentrations and non-cancer hazard HI from these roadways would be below the BAAQMD significance thresholds for community risk from single sources. The output from the roadway screening calculator is provided in *Attachment 4*.

Stationary Sources

Permitted stationary sources of air pollution near the project site were identified using BAAQMD's *Stationary Source Risk & Hazard Analysis Tool*. This mapping tool uses Google Earth to identify the location of stationary sources and their estimated risk and hazard impacts. A Stationary Source Inquiry Form (SSIF) was prepared with available plant information. BAAQMD provides screening plant cancer risk, hazard and annual PM2.5 concentration predictions, distance multipliers (i.e., *Diesel BUG Distance Multiplier* and *Gas Station Distance Multiplier*) to adjust the risk levels for distance between the sources and the closest portion of the project site where sensitive receptors would reside. These factors were used, as recommended by BAAQMD, for the five gasoline stations and one diesel generator. In addition, the cancer risk levels were adjusted by a factor of +1.3744 to adjust for cancer risk calculations that use the new OEHHA guidance described above. The risk levels, shown in *Table 4*, from each of these sources are below the significance thresholds established by BAAQMD.

Cumulative Community Risk Levels

The combination of risk, hazards and annual $PM_{2.5}$ concentrations are also reported in *Table 5*. This was computed by simply adding the risk from each source, which results in an overestimate of the cumulative levels. This methodology assumes the maximum effect on the site from each source occurs at one location, while each source has a maximum impact at a different location within the site. However, the cumulative risk levels using this conservative assumption are below the significance thresholds; therefore, a refined analysis of the cumulative levels was not conducted.

Recommended AQ Measure: Include high-efficiency particulate filtration systems in residential ventilation systems.

The significant exposure for new project receptors is judged by two effects: (1) increased cancer risk, and (2) annual $PM_{2.5}$ concentration. Cancer risk and exposure to annual $PM_{2.5}$ concentrations from I-580 are significant. Cancer risk is mostly the result of exposure to diesel particulate matter, although, gasoline vehicle exhaust contributes. Annual $PM_{2.5}$ concentrations are based on the exposure to $PM_{2.5}$ resulting from emissions attributable to truck and auto exhaust, the wearing of brakes and tires and re-entrainment of roadway dust from vehicles traveling over pavement. $PM_{2.5}$ exposure drives the mitigation plan. Reducing particulate matter exposure would reduce both annual $PM_{2.5}$ exposures and cancer risk.

The project shall include the following measures to minimize long-term annual $PM_{2.5}$ exposure for new project occupants:

1. Install air filtration in residential buildings for the portions of the site where cancer risks exceed 10.0 (see Figure 4) or annual $PM_{2.5}$ exposure is above 0.3 $\mu g/m^3$ (see Figure 5) Air filtration

[12] Most recent counts available at http://www.cityoflivermore.net/civicax/filebank/documents/9402/, accessed June 2, 2016.

devices shall be rated MERV13 or higher. To ensure adequate health protection to sensitive receptors (i.e., residents), this ventilation system, whether mechanical or passive, all fresh air circulated into the dwelling units shall be filtered.

2. As part of implementing this measure, an ongoing maintenance plan for the buildings' heating, ventilation, and air conditioning (HVAC) air filtration system shall be required.

3. Ensure that the use agreement and other property documents: (1) require cleaning, maintenance, and monitoring of the affected buildings for air flow leaks, (2) include assurance that new owners or tenants are provided information on the ventilation system, and (3) include provisions that fees associated with owning or leasing a unit(s) in the building include funds for cleaning, maintenance, monitoring, and replacements of the filters, as needed.

Effectiveness: A properly installed and operated ventilation system with MERV13 filters should achieve reductions of 80 percent. Increased cancer risk and $PM_{2.5}$ exposures for MERV13 filtration cases were calculated assuming a combination of outdoor and indoor exposure. For use of MERV13 filtration systems, without the additional use of sealed, inoperable widows and no balconies, three hours of outdoor exposure to ambient $PM_{2.5}$ concentrations and 21 hours of indoor exposure to filtered air was assumed. In this case, the effective control efficiency using a MERV13 filtration system is about 70 percent for $PM_{2.5}$ exposure. This would reduce the maximum cancer risk to 7.5 in one million and the annual $PM_{2.5}$ concentration below 0.2 $\mu g/m^3$. Figures 6 and 7 show the cancer risk and annual $PM_{2.5}$ concentrations across the site.

Figure 6. Increased Cancer Risks (per million) in Future Project Residential Areas With MERV13 Filtration Systems

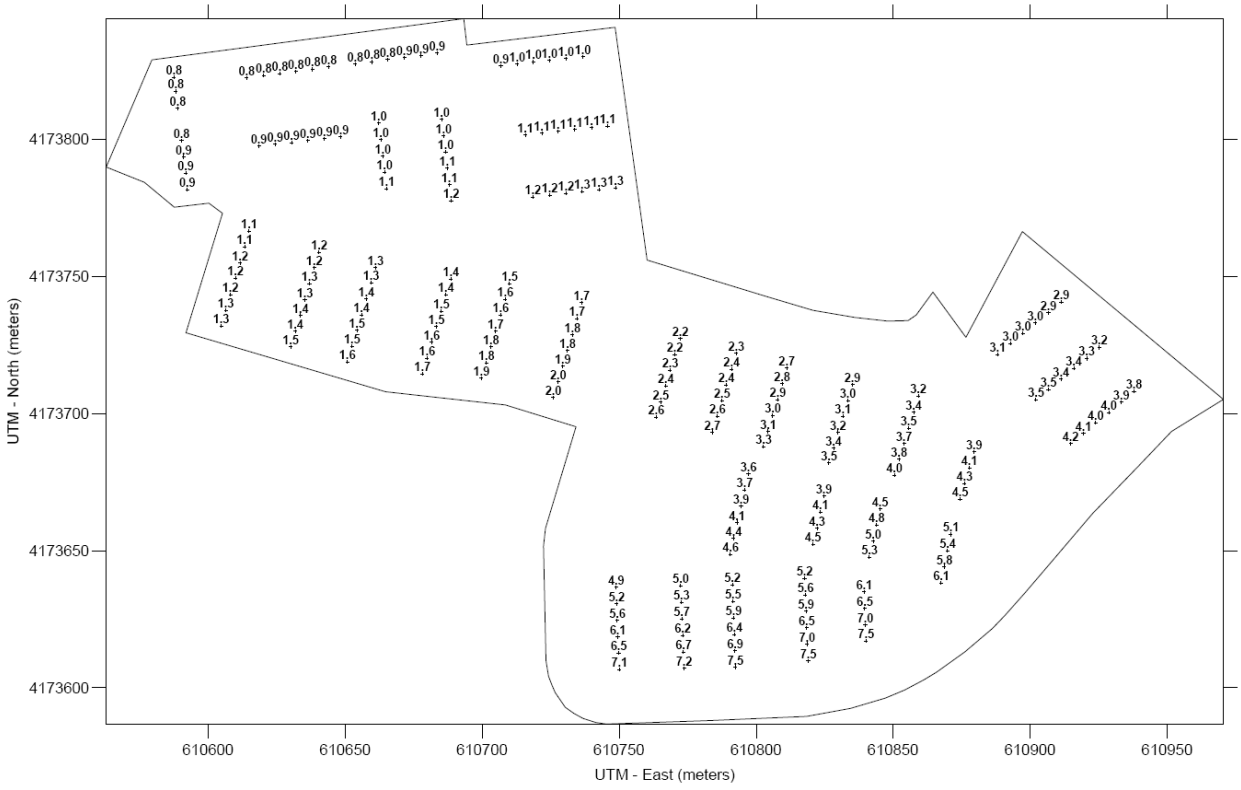
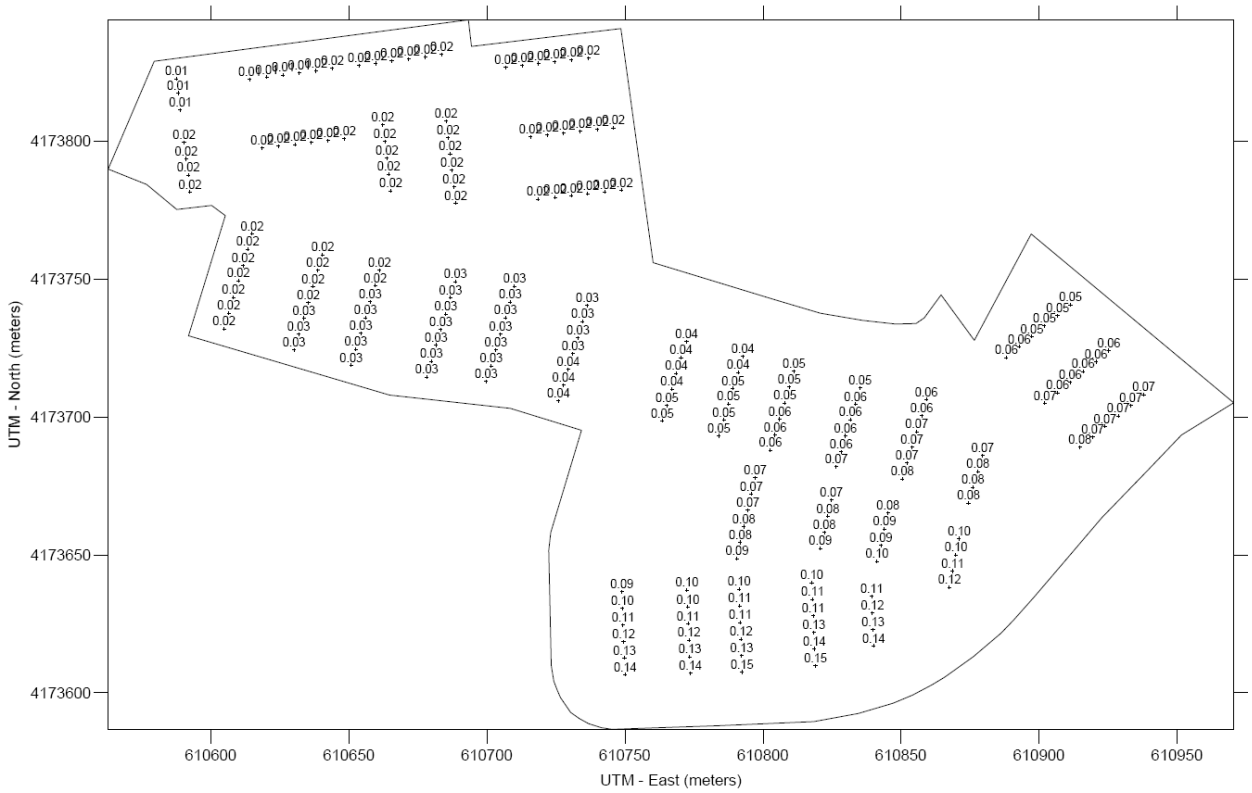


Figure 7. $PM_{2.5}$ Concentrations (µg/m^3) in Future Project Residential Areas With MERV13 Filtration Systems



GHG Emissions

GHG emissions associated with the 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 were predicted using the methodology recommended in the BAAQMD CEQA Air Quality Guidelines.[13]

CalEEMod Modeling

The CalEEMod model (version 2016.3.2) was used to predict air pollutant emissions associated with the project, as described under *Air Quality Impact 1*. The CalEEMod modeling included default conditions developed for the model. One exception was for emissions from electricity generation. 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 latest PG&E rate reported in the California Climate Registry, which is 430 pounds of CO_2 per megawatt of electricity produced in 2013.[14]

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

[14] See Climate Registry most current version of default emissions factors: http://www.theclimateregistry.org/tools-resources/reporting-protocols/general-reporting-protocol. Accessed: May 17, 2016.

Construction Emissions

GHG emissions associated with construction of the maximum land uses under rezoning were computed to range from 477 to 1,168 metric tons of CO_2e per year under the most intensive construction scenario. The total construction period emissions were computed as 1,645 metric tons. 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 rezoning 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

Following construction, emissions would occur on a nearly continuous basis as the project operates through traffic generation, energy usage, water usage and waste generation. The CalEEMod model was used to predict annual emissions associated with operation of the fully-developed project. The operational emissions were assumed to be at the highest levels in 2021 with the full build-out and occupancy of the project[15]. Unmitigated emissions were computed for 2018 for comparison to the significance thresholds. *Table 6* reports the annual emissions resulting from operation of the project.

[15] Note that the provided construction schedule indicates that the project would not be completed until mid-2021.

Table 6. Annual Project GHG Emissions (CO_2e) in Metric Tons

Source Category	2021 Emissions	2030 Emissions
Area	10	10
Energy Consumption	335	335
Mobile	1,170	958
Solid Waste Generation	45	45
Water Usage	21	21
Total Emissions	1,582	1,370
Per Capita Emissions*	2.9 MT CO_2e/capita	2.5 MT CO2e/capita
Threshold	--	2.6 MT CO2e/capita
*Based on a projected population of 549 persons using 2.80 persons per household per the US Census data[16]		

Supporting Information

Attachment 1 includes the CalEEMod modeling output used to predict construction and operational period criteria air pollutant and GHG emissions. **Attachment 2** includes the Health Risk Assessment Methodology used to predict community risk impacts in the form of increased lifetime cancer risk, non-cancer health hazards from air pathway exposure, and annual fine particulate matter concentration. **Attachment 3** includes the construction health risk assessment, including the CalEEMod modeling output for construction emissions from on- and near-site activity. **Attachment 4** includes the health risk assessment of TAC sources affecting the project site.

[16] US Census data for Livermore, CA Persons per household, 2011-2016 https://www.census.gov/quickfacts/table/PST045215/0641992 accessed January 16, 2018.

Attachment 1: CalEEMod Construction and Operational Emissions Output

Lassen Road - Alameda County, Annual

Lassen Road

Alameda County, Annual

Construction and Operation Criteria Air Pollutants and GHG

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Condo/Townhouse	196.00	Dwelling Unit	13.00	330,000.00	561
Parking Lot	390.00	Space	0.00	156,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	4			**Operational Year**	2021
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Based on provided construciton info

Land Use - Based on provided construction data - and US cesus = 2.80 pphh

Construction Phase - Based on provided construciton information

Off-road Equipment - Based on provided construction information

Grading - on-site earthwork

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment - Based on provided construction information

Demolition -

Trips and VMT -

Woodstoves - no woodburning

Energy Use -

Water And Wastewater - wastewater treatment plant

Solid Waste -

Construction Off-road Equipment Mitigation - Tier 2 mobile/Tier 4i portable/BMPs

Area Mitigation - no wood burning

Energy Mitigation - High efficiency lighting

Water Mitigation - Basic water conservation

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	10.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
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
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	20.00	180.00
tblConstructionPhase	NumDays	300.00	265.00
tblConstructionPhase	NumDays	20.00	5.00
tblConstructionPhase	NumDays	30.00	65.00
tblConstructionPhase	NumDays	20.00	22.00
tblConstructionPhase	NumDays	10.00	5.00
tblConstructionPhase	PhaseEndDate	9/24/2020	7/31/2020
tblConstructionPhase	PhaseEndDate	7/30/2020	8/28/2020
tblConstructionPhase	PhaseEndDate	4/11/2019	3/21/2019

tblConstructionPhase	PhaseEndDate	6/6/2019	6/25/2019
tblConstructionPhase	PhaseEndDate	8/27/2020	12/2/2019
tblConstructionPhase	PhaseEndDate	4/25/2019	3/27/2019
tblConstructionPhase	PhaseStartDate	8/28/2020	11/24/2019
tblConstructionPhase	PhaseStartDate	6/7/2019	8/24/2019
tblConstructionPhase	PhaseStartDate	4/26/2019	3/27/2019
tblConstructionPhase	PhaseStartDate	7/31/2020	11/1/2019
tblConstructionPhase	PhaseStartDate	4/12/2019	3/21/2019
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	29.40	63.00
tblFireplaces	NumberWood	33.32	0.00
tblGrading	MaterialExported	0.00	140,000.00
tblLandUse	LandUseSquareFeet	196,000.00	330,000.00
tblLandUse	LotAcreage	12.25	13.00
tblLandUse	LotAcreage	3.51	0.00
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWoodstoves	WoodstoveWoodMass	582.40	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					
2019	0.7977	6.2786	3.1474	0.0125	0.5854	0.1767	0.7620	0.2112	0.1643	0.3755	0.0000	1,164.5430	1,164.5430	0.1429	0.0000	1,168.1149
2020	2.2921	2.3200	2.2510	5.3100e-003	0.1931	0.1085	0.3016	0.0520	0.1025	0.1545	0.0000	475.3065	475.3065	0.0604	0.0000	476.8163
Maximum	**2.2921**	**6.2786**	**3.1474**	**0.0125**	**0.5854**	**0.1767**	**0.7620**	**0.2112**	**0.1643**	**0.3755**	**0.0000**	**1,164.5430**	**1,164.5430**	**0.1429**	**0.0000**	**1,168.1149**

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					
2019	0.6096	6.2139	3.3430	0.0125	0.4011	0.0281	0.4292	0.1326	0.0275	0.1601	0.0000	1,164.5426	1,164.5426	0.1429	0.0000	1,168.1145
2020	2.1712	2.4001	2.3398	5.3100e-003	0.1931	0.0161	0.2092	0.0520	0.0160	0.0679	0.0000	475.3063	475.3063	0.0604	0.0000	476.8161
Maximum	**2.1712**	**6.2139**	**3.3430**	**0.0125**	**0.4011**	**0.0281**	**0.4292**	**0.1326**	**0.0275**	**0.1601**	**0.0000**	**1,164.5426**	**1,164.5426**	**0.1429**	**0.0000**	**1,168.1145**

	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	**10.00**	**-0.18**	**-5.27**	**0.00**	**23.67**	**84.49**	**39.97**	**29.86**	**83.70**	**56.97**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	3-15-2019	6-14-2019	4.3260	4.0948
2	6-15-2019	9-14-2019	0.9198	0.9260

3	**9-15-2019**	**12-14-2019**	1.4423	1.4329
4	**12-15-2019**	**3-14-2020**	1.8624	1.8300
5	**3-15-2020**	**6-14-2020**	1.8580	1.8394
6	**6-15-2020**	**9-14-2020**	1.2301	1.2231
		Highest	4.3260	4.0948

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	1.5798	0.0237	1.4650	1.2000e-004		8.6000e-003	8.6000e-003		8.6000e-003	8.6000e-003	0.0000	10.2491	10.2491	2.4700e-003	1.4000e-004	10.3539
Energy	0.0198	0.1691	0.0720	1.0800e-003		0.0137	0.0137		0.0137	0.0137	0.0000	333.0941	333.0941	0.0175	6.4300e-003	335.4473
Mobile	0.3209	2.1111	3.5170	0.0127	0.9569	0.0126	0.9694	0.2572	0.0118	0.2690	0.0000	1,168.5685	1,168.5685	0.0519	0.0000	1,169.8649
Waste						0.0000	0.0000		0.0000	0.0000	18.3017	0.0000	18.3017	1.0816	0.0000	45.3416
Water						0.0000	0.0000		0.0000	0.0000	4.5181	12.7960	17.3141	0.0168	0.0101	20.7418
Total	**1.9205**	**2.3038**	**5.0540**	**0.0139**	**0.9569**	**0.0348**	**0.9917**	**0.2572**	**0.0341**	**0.2913**	**22.8198**	**1,524.7078**	**1,547.5275**	**1.1702**	**0.0167**	**1,581.7495**

Mitigated 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	1.5798	0.0237	1.4650	1.2000e-004		8.6000e-003	8.6000e-003		8.6000e-003	8.6000e-003	0.0000	10.2491	10.2491	2.4700e-003	1.4000e-004	10.3539

Energy	0.0198	0.1691	0.0720	1.0800e-003		0.0137	0.0137		0.0137	0.0137	0.0000	320.4628	320.4628	0.0162	6.1700e-003	322.7065
Mobile	0.3209	2.1111	3.5170	0.0127	0.9569	0.0126	0.9694	0.2572	0.0118	0.2690	0.0000	1,168.5685	1,168.5685	0.0519	0.0000	1,169.8649
Waste						0.0000	0.0000		0.0000	0.0000	18.3017	0.0000	18.3017	1.0816	0.0000	45.3416
Water						0.0000	0.0000		0.0000	0.0000	3.6145	10.7520	14.3665	0.0135	8.0800e-003	17.1131
Total	**1.9205**	**2.3038**	**5.0540**	**0.0139**	**0.9569**	**0.0348**	**0.9917**	**0.2572**	**0.0341**	**0.2913**	**21.9162**	**1,510.0324**	**1,531.9486**	**1.1657**	**0.0144**	**1,565.3800**

	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	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**3.96**	**0.96**	**1.01**	**0.39**	**13.63**	**1.03**

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	3/15/2019	3/21/2019	5	5	
2	Site Preparation	Site Preparation	3/21/2019	3/27/2019	5	5	
3	Grading	Grading	3/27/2019	6/25/2019	5	65	
4	Building Construction	Building Construction	8/24/2019	8/28/2020	5	265	
5	Paving	Paving	11/1/2019	12/2/2019	5	22	
6	Building Interior	Architectural Coating	11/24/2019	7/31/2020	5	180	
7	trenching	Trenching	7/2/2019	9/30/2019	5	65	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 162.5

Acres of Paving: 0

Residential Indoor: 668,250; Residential Outdoor: 222,750; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area:

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor

Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Building Interior	Air Compressors	1	6.00	78	0.48
trenching	Tractors/Loaders/Backhoes	1	6.00	97	0.37
trenching	Excavators	1	6.00	158	0.38

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	5	13.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	17,500.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	207.00	47.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

Building Interior	1	41.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
trenching	2	5.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use DPF for Construction Equipment

Use Soil Stabilizer

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2019

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	7.6300e-003	0.0805	0.0459	8.0000e-005		3.9100e-003	3.9100e-003		3.6000e-003	3.6000e-003	0.0000	7.3124	7.3124	2.3100e-003	0.0000	7.3703
Total	**7.6300e-003**	**0.0805**	**0.0459**	**8.0000e-005**		**3.9100e-003**	**3.9100e-003**		**3.6000e-003**	**3.6000e-003**	**0.0000**	**7.3124**	**7.3124**	**2.3100e-003**	**0.0000**	**7.3703**

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	1.2000e-004	9.0000e-005	9.5000e-004	0.0000	2.6000e-004	0.0000	2.6000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.2357	0.2357	1.0000e-005	0.0000	0.2359
Total	**1.2000e-004**	**9.0000e-005**	**9.5000e-004**	**0.0000**	**2.6000e-004**	**0.0000**	**2.6000e-004**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**0.0000**	**0.2357**	**0.2357**	**1.0000e-005**	**0.0000**	**0.2359**

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	2.5500e-003	0.0693	0.0520	8.0000e-005		2.7000e-004	2.7000e-004		2.7000e-004	2.7000e-004	0.0000	7.3124	7.3124	2.3100e-003	0.0000	7.3703
Total	**2.5500e-003**	**0.0693**	**0.0520**	**8.0000e-005**		**2.7000e-004**	**2.7000e-004**		**2.7000e-004**	**2.7000e-004**	**0.0000**	**7.3124**	**7.3124**	**2.3100e-003**	**0.0000**	**7.3703**

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	1.2000e-004	9.0000e-005	9.5000e-004	0.0000	2.6000e-004	0.0000	2.6000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.2357	0.2357	1.0000e-005	0.0000	0.2359
Total	**1.2000e-004**	**9.0000e-005**	**9.5000e-004**	**0.0000**	**2.6000e-004**	**0.0000**	**2.6000e-004**	**7.0000e-005**	**0.0000**	**7.0000e-005**	**0.0000**	**0.2357**	**0.2357**	**1.0000e-005**	**0.0000**	**0.2359**

3.3 Site Preparation - 2019

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					0.0452	0.0000	0.0452	0.0248	0.0000	0.0248	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0108	0.1139	0.0552	9.0000e-005		5.9800e-003	5.9800e-003		5.5000e-003	5.5000e-003	0.0000	8.5422	8.5422	2.7000e-003	0.0000	8.6097
Total	**0.0108**	**0.1139**	**0.0552**	**9.0000e-005**	**0.0452**	**5.9800e-003**	**0.0512**	**0.0248**	**5.5000e-003**	**0.0303**	**0.0000**	**8.5422**	**8.5422**	**2.7000e-003**	**0.0000**	**8.6097**

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	1.7000e-004	1.3000e-004	1.3100e-003	0.0000	3.6000e-004	0.0000	3.6000e-004	9.0000e-005	0.0000	1.0000e-004	0.0000	0.3264	0.3264	1.0000e-005	0.0000	0.3266
Total	**1.7000e-004**	**1.3000e-004**	**1.3100e-003**	**0.0000**	**3.6000e-004**	**0.0000**	**3.6000e-004**	**9.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**	**0.3264**	**0.3264**	**1.0000e-005**	**0.0000**	**0.3266**

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					0.0203	0.0000	0.0203	0.0112	0.0000	0.0112	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.0200e-003	0.0843	0.0574	9.0000e-005		3.5000e-004	3.5000e-004		3.5000e-004	3.5000e-004	0.0000	8.5422	8.5422	2.7000e-003	0.0000	8.6097
Total	**3.0200e-003**	**0.0843**	**0.0574**	**9.0000e-005**	**0.0203**	**3.5000e-004**	**0.0207**	**0.0112**	**3.5000e-004**	**0.0115**	**0.0000**	**8.5422**	**8.5422**	**2.7000e-003**	**0.0000**	**8.6097**

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	1.7000e-004	1.3000e-004	1.3100e-003	0.0000	3.6000e-004	0.0000	3.6000e-004	9.0000e-005	0.0000	1.0000e-004	0.0000	0.3264	0.3264	1.0000e-005	0.0000	0.3266
Total	**1.7000e-004**	**1.3000e-004**	**1.3100e-003**	**0.0000**	**3.6000e-004**	**0.0000**	**3.6000e-004**	**9.0000e-005**	**0.0000**	**1.0000e-004**	**0.0000**	**0.3264**	**0.3264**	**1.0000e-005**	**0.0000**	**0.3266**

3.4 Grading - 2019

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					0.2898	0.0000	0.2898	0.1181	0.0000	0.1181	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1540	1.7719	1.0847	2.0200e-003		0.0774	0.0774		0.0712	0.0712	0.0000	181.0293	181.0293	0.0573	0.0000	182.4612

Total	**0.1540**	**1.7719**	**1.0847**	**2.0200e-003**	**0.2898**	**0.0774**	**0.3672**	**0.1181**	**0.0712**	**0.1893**	**0.0000**	**181.0293**	**181.0293**	**0.0573**	**0.0000**	**182.4612**

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	0.0798	2.7191	0.4643	7.0300e-003	0.1482	9.8500e-003	0.1580	0.0408	9.4200e-003	0.0502	0.0000	677.0908	677.0908	0.0352	0.0000	677.9718
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	2.4600e-003	1.8800e-003	0.0190	5.0000e-005	5.1400e-003	4.0000e-005	5.1800e-003	1.3700e-003	3.0000e-005	1.4000e-003	0.0000	4.7144	4.7144	1.3000e-004	0.0000	4.7178
Total	**0.0822**	**2.7210**	**0.4833**	**7.0800e-003**	**0.1533**	**9.8900e-003**	**0.1632**	**0.0422**	**9.4500e-003**	**0.0516**	**0.0000**	**681.8052**	**681.8052**	**0.0354**	**0.0000**	**682.6895**

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					0.1304	0.0000	0.1304	0.0531	0.0000	0.0531	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0588	1.6653	1.1935	2.0200e-003		6.5000e-003	6.5000e-003		6.5000e-003	6.5000e-003	0.0000	181.0291	181.0291	0.0573	0.0000	182.4610
Total	**0.0588**	**1.6653**	**1.1935**	**2.0200e-003**	**0.1304**	**6.5000e-003**	**0.1369**	**0.0531**	**6.5000e-003**	**0.0596**	**0.0000**	**181.0291**	**181.0291**	**0.0573**	**0.0000**	**182.4610**

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	0.0798	2.7191	0.4643	7.0300e-003	0.1482	9.8500e-003	0.1580	0.0408	9.4200e-003	0.0502	0.0000	677.0908	677.0908	0.0352	0.0000	677.9718
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	2.4600e-003	1.8800e-003	0.0190	5.0000e-005	5.1400e-003	4.0000e-005	5.1800e-003	1.3700e-003	3.0000e-005	1.4000e-003	0.0000	4.7144	4.7144	1.3000e-004	0.0000	4.7178
Total	**0.0822**	**2.7210**	**0.4833**	**7.0800e-003**	**0.1533**	**9.8900e-003**	**0.1632**	**0.0422**	**9.4500e-003**	**0.0516**	**0.0000**	**681.8052**	**681.8052**	**0.0354**	**0.0000**	**682.6895**

3.5 Building Construction - 2019

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	0.1086	0.9696	0.7895	1.2400e-003		0.0593	0.0593		0.0558	0.0558	0.0000	108.1479	108.1479	0.0264	0.0000	108.8066
Total	**0.1086**	**0.9696**	**0.7895**	**1.2400e-003**		**0.0593**	**0.0593**		**0.0558**	**0.0558**	**0.0000**	**108.1479**	**108.1479**	**0.0264**	**0.0000**	**108.8066**

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	9.7400e-003	0.2765	0.0612	6.0000e-004	0.0142	1.7700e-003	0.0160	4.1100e-003	1.6900e-003	5.8000e-003	0.0000	57.5903	57.5903	3.5500e-003	0.0000	57.6790
Worker	0.0360	0.0275	0.2777	7.6000e-004	0.0753	5.4000e-004	0.0758	0.0200	4.9000e-004	0.0205	0.0000	69.0623	69.0623	1.9700e-003	0.0000	69.1115
Total	**0.0458**	**0.3040**	**0.3389**	**1.3600e-003**	**0.0895**	**2.3100e-003**	**0.0918**	**0.0241**	**2.1800e-003**	**0.0263**	**0.0000**	**126.6526**	**126.6526**	**5.5200e-003**	**0.0000**	**126.7905**

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	0.0408	0.9505	0.8222	1.2400e-003		6.6300e-003	6.6300e-003		6.6300e-003	6.6300e-003	0.0000	108.1478	108.1478	0.0264	0.0000	108.8065
Total	**0.0408**	**0.9505**	**0.8222**	**1.2400e-003**		**6.6300e-003**	**6.6300e-003**		**6.6300e-003**	**6.6300e-003**	**0.0000**	**108.1478**	**108.1478**	**0.0264**	**0.0000**	**108.8065**

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	9.7400e-003	0.2765	0.0612	6.0000e-004	0.0142	1.7700e-003	0.0160	4.1100e-003	1.6900e-003	5.8000e-003	0.0000	57.5903	57.5903	3.5500e-003	0.0000	57.6790
Worker	0.0360	0.0275	0.2777	7.6000e-004	0.0753	5.4000e-004	0.0758	0.0200	4.9000e-004	0.0205	0.0000	69.0623	69.0623	1.9700e-003	0.0000	69.1115
Total	**0.0458**	**0.3040**	**0.3389**	**1.3600e-003**	**0.0895**	**2.3100e-003**	**0.0918**	**0.0241**	**2.1800e-003**	**0.0263**	**0.0000**	**126.6526**	**126.6526**	**5.5200e-003**	**0.0000**	**126.7905**

3.5 Building Construction - 2020

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	0.1834	1.6596	1.4574	2.3300e-003		0.0966	0.0966		0.0909	0.0909	0.0000	200.3426	200.3426	0.0489	0.0000	201.5646
Total	**0.1834**	**1.6596**	**1.4574**	**2.3300e-003**		**0.0966**	**0.0966**		**0.0909**	**0.0909**	**0.0000**	**200.3426**	**200.3426**	**0.0489**	**0.0000**	**201.5646**

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	0.0153	0.4779	0.1030	1.1200e-003	0.0267	2.2200e-003	0.0289	7.7200e-003	2.1200e-003	9.8400e-003	0.0000	107.5367	107.5367	6.1800e-003	0.0000	107.6913
Worker	0.0619	0.0457	0.4685	1.3900e-003	0.1416	9.8000e-004	0.1426	0.0377	9.1000e-004	0.0386	0.0000	125.8498	125.8498	3.2500e-003	0.0000	125.9310
Total	**0.0772**	**0.5236**	**0.5715**	**2.5100e-003**	**0.1683**	**3.2000e-003**	**0.1715**	**0.0454**	**3.0300e-003**	**0.0484**	**0.0000**	**233.3865**	**233.3865**	**9.4300e-003**	**0.0000**	**233.6223**

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	0.0768	1.7874	1.5461	2.3300e-003		0.0125	0.0125		0.0125	0.0125	0.0000	200.3424	200.3424	0.0489	0.0000	201.5643
Total	**0.0768**	**1.7874**	**1.5461**	**2.3300e-003**		**0.0125**	**0.0125**		**0.0125**	**0.0125**	**0.0000**	**200.3424**	**200.3424**	**0.0489**	**0.0000**	**201.5643**

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	0.0153	0.4779	0.1030	1.1200e-003	0.0267	2.2200e-003	0.0289	7.7200e-003	2.1200e-003	9.8400e-003	0.0000	107.5367	107.5367	6.1800e-003	0.0000	107.6913
Worker	0.0619	0.0457	0.4685	1.3900e-003	0.1416	9.8000e-004	0.1426	0.0377	9.1000e-004	0.0386	0.0000	125.8498	125.8498	3.2500e-003	0.0000	125.9310
Total	**0.0772**	**0.5236**	**0.5715**	**2.5100e-003**	**0.1683**	**3.2000e-003**	**0.1715**	**0.0454**	**3.0300e-003**	**0.0484**	**0.0000**	**233.3865**	**233.3865**	**9.4300e-003**	**0.0000**	**233.6223**

3.6 Paving - 2019

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	0.0160	0.1677	0.1613	2.5000e-004		9.0700e-003	9.0700e-003		8.3400e-003	8.3400e-003	0.0000	22.5227	22.5227	7.1300e-003	0.0000	22.7009

Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0160**	**0.1677**	**0.1613**	**2.5000e-004**		**9.0700e-003**	**9.0700e-003**		**8.3400e-003**	**8.3400e-003**	**0.0000**	**22.5227**	**22.5227**	**7.1300e-003**	**0.0000**	**22.7009**

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	6.2000e-004	4.8000e-004	4.8100e-003	1.0000e-005	1.3000e-003	1.0000e-005	1.3100e-003	3.5000e-004	1.0000e-005	3.6000e-004	0.0000	1.1967	1.1967	3.0000e-005	0.0000	1.1976
Total	**6.2000e-004**	**4.8000e-004**	**4.8100e-003**	**1.0000e-005**	**1.3000e-003**	**1.0000e-005**	**1.3100e-003**	**3.5000e-004**	**1.0000e-005**	**3.6000e-004**	**0.0000**	**1.1967**	**1.1967**	**3.0000e-005**	**0.0000**	**1.1976**

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	0.0102	0.2213	0.1903	2.5000e-004		1.1000e-003	1.1000e-003		1.1000e-003	1.1000e-003	0.0000	22.5227	22.5227	7.1300e-003	0.0000	22.7008
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0102**	**0.2213**	**0.1903**	**2.5000e-004**		**1.1000e-003**	**1.1000e-003**		**1.1000e-003**	**1.1000e-003**	**0.0000**	**22.5227**	**22.5227**	**7.1300e-003**	**0.0000**	**22.7008**

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	6.2000e-004	4.8000e-004	4.8100e-003	1.0000e-005	1.3000e-003	1.0000e-005	1.3100e-003	3.5000e-004	1.0000e-005	3.6000e-004	0.0000	1.1967	1.1967	3.0000e-005	0.0000	1.1976
Total	**6.2000e-004**	**4.8000e-004**	**4.8100e-003**	**1.0000e-005**	**1.3000e-003**	**1.0000e-005**	**1.3100e-003**	**3.5000e-004**	**1.0000e-005**	**3.6000e-004**	**0.0000**	**1.1967**	**1.1967**	**3.0000e-005**	**0.0000**	**1.1976**

3.7 Building Interior - 2019

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	0.3533					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.6000e-003	0.0248	0.0249	4.0000e-005		1.7400e-003	1.7400e-003		1.7400e-003	1.7400e-003	0.0000	3.4469	3.4469	2.9000e-004	0.0000	3.4542
Total	**0.3569**	**0.0248**	**0.0249**	**4.0000e-005**		**1.7400e-003**	**1.7400e-003**		**1.7400e-003**	**1.7400e-003**	**0.0000**	**3.4469**	**3.4469**	**2.9000e-004**	**0.0000**	**3.4542**

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	2.1000e-003	1.6000e-003	0.0161	4.0000e-005	4.3800e-003	3.0000e-005	4.4100e-003	1.1600e-003	3.0000e-005	1.1900e-003	0.0000	4.0145	4.0145	1.1000e-004	0.0000	4.0174
Total	**2.1000e-003**	**1.6000e-003**	**0.0161**	**4.0000e-005**	**4.3800e-003**	**3.0000e-005**	**4.4100e-003**	**1.1600e-003**	**3.0000e-005**	**1.1900e-003**	**0.0000**	**4.0145**	**4.0145**	**1.1000e-004**	**0.0000**	**4.0174**

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	0.3533					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.4000e-004	0.0143	0.0247	4.0000e-005		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	3.4469	3.4469	2.9000e-004	0.0000	3.4542
Total	**0.3541**	**0.0143**	**0.0247**	**4.0000e-005**		**5.0000e-005**	**5.0000e-005**		**5.0000e-005**	**5.0000e-005**	**0.0000**	**3.4469**	**3.4469**	**2.9000e-004**	**0.0000**	**3.4542**

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	2.1000e-003	1.6000e-003	0.0161	4.0000e-005	4.3800e-003	3.0000e-005	4.4100e-003	1.1600e-003	3.0000e-005	1.1900e-003	0.0000	4.0145	4.0145	1.1000e-004	0.0000	4.0174
Total	**2.1000e-003**	**1.6000e-003**	**0.0161**	**4.0000e-005**	**4.3800e-003**	**3.0000e-005**	**4.4100e-003**	**1.1600e-003**	**3.0000e-005**	**1.1900e-003**	**0.0000**	**4.0145**	**4.0145**	**1.1000e-004**	**0.0000**	**4.0174**

3.7 Building Interior - 2020

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	2.0022					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0185	0.1288	0.1401	2.3000e-004		8.4900e-003	8.4900e-003		8.4900e-003	8.4900e-003	0.0000	19.5324	19.5324	1.5100e-003	0.0000	19.5702
Total	**2.0207**	**0.1288**	**0.1401**	**2.3000e-004**		**8.4900e-003**	**8.4900e-003**		**8.4900e-003**	**8.4900e-003**	**0.0000**	**19.5324**	**19.5324**	**1.5100e-003**	**0.0000**	**19.5702**

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	0.0109	8.0000e-003	0.0821	2.4000e-004	0.0248	1.7000e-004	0.0250	6.6000e-003	1.6000e-004	6.7600e-003	0.0000	22.0451	22.0451	5.7000e-004	0.0000	22.0593
Total	**0.0109**	**8.0000e-003**	**0.0821**	**2.4000e-004**	**0.0248**	**1.7000e-004**	**0.0250**	**6.6000e-003**	**1.6000e-004**	**6.7600e-003**	**0.0000**	**22.0451**	**22.0451**	**5.7000e-004**	**0.0000**	**22.0593**

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	2.0022					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.1700e-003	0.0811	0.1402	2.3000e-004		3.0000e-004	3.0000e-004		3.0000e-004	3.0000e-004	0.0000	19.5324	19.5324	1.5100e-003	0.0000	19.5702
Total	**2.0064**	**0.0811**	**0.1402**	**2.3000e-004**		**3.0000e-004**	**3.0000e-004**		**3.0000e-004**	**3.0000e-004**	**0.0000**	**19.5324**	**19.5324**	**1.5100e-003**	**0.0000**	**19.5702**

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	0.0109	8.0000e-003	0.0821	2.4000e-004	0.0248	1.7000e-004	0.0250	6.6000e-003	1.6000e-004	6.7600e-003	0.0000	22.0451	22.0451	5.7000e-004	0.0000	22.0593
Total	**0.0109**	**8.0000e-003**	**0.0821**	**2.4000e-004**	**0.0248**	**1.7000e-004**	**0.0250**	**6.6000e-003**	**1.6000e-004**	**6.7600e-003**	**0.0000**	**22.0451**	**22.0451**	**5.7000e-004**	**0.0000**	**22.0593**

3.8 trenching - 2019

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	0.0120	0.1224	0.1358	2.0000e-004		6.9600e-003	6.9600e-003		6.4000e-003	6.4000e-003	0.0000	18.1318	18.1318	5.7400e-003	0.0000	18.2753

Total	**0.0120**	**0.1224**	**0.1358**	**2.0000e-004**		**6.9600e-003**	**6.9600e-003**		**6.4000e-003**	**6.4000e-003**	**0.0000**	**18.1318**	**18.1318**	**5.7400e-003**	**0.0000**	**18.2753**

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	6.2000e-004	4.7000e-004	4.7400e-003	1.0000e-005	1.2800e-003	1.0000e-005	1.2900e-003	3.4000e-004	1.0000e-005	3.5000e-004	0.0000	1.1786	1.1786	3.0000e-005	0.0000	1.1794
Total	**6.2000e-004**	**4.7000e-004**	**4.7400e-003**	**1.0000e-005**	**1.2800e-003**	**1.0000e-005**	**1.2900e-003**	**3.4000e-004**	**1.0000e-005**	**3.5000e-004**	**0.0000**	**1.1786**	**1.1786**	**3.0000e-005**	**0.0000**	**1.1794**

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	8.4600e-003	0.1812	0.1528	2.0000e-004		9.4000e-004	9.4000e-004		9.4000e-004	9.4000e-004	0.0000	18.1318	18.1318	5.7400e-003	0.0000	18.2752
Total	**8.4600e-003**	**0.1812**	**0.1528**	**2.0000e-004**		**9.4000e-004**	**9.4000e-004**		**9.4000e-004**	**9.4000e-004**	**0.0000**	**18.1318**	**18.1318**	**5.7400e-003**	**0.0000**	**18.2752**

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	6.2000e-004	4.7000e-004	4.7400e-003	1.0000e-005	1.2800e-003	1.0000e-005	1.2900e-003	3.4000e-004	1.0000e-005	3.5000e-004	0.0000	1.1786	1.1786	3.0000e-005	0.0000	1.1794
Total	**6.2000e-004**	**4.7000e-004**	**4.7400e-003**	**1.0000e-005**	**1.2800e-003**	**1.0000e-005**	**1.2900e-003**	**3.4000e-004**	**1.0000e-005**	**3.5000e-004**	**0.0000**	**1.1786**	**1.1786**	**3.0000e-005**	**0.0000**	**1.1794**

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					
Mitigated	0.3209	2.1111	3.5170	0.0127	0.9569	0.0126	0.9694	0.2572	0.0118	0.2690	0.0000	1,168.5685	1,168.5685	0.0519	0.0000	1,169.8649
Unmitigated	0.3209	2.1111	3.5170	0.0127	0.9569	0.0126	0.9694	0.2572	0.0118	0.2690	0.0000	1,168.5685	1,168.5685	0.0519	0.0000	1,169.8649

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT

Condo/Townhouse	1,138.76	1,111.32	948.64	2,558,306	2,558,306
Parking Lot	0.00	0.00	0.00		
Total	1,138.76	1,111.32	948.64	2,558,306	2,558,306

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
Condo/Townhouse	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Condo/Townhouse	0.559358	0.040058	0.190549	0.109335	0.016678	0.005213	0.023344	0.044042	0.002152	0.002669	0.005545	0.000316	0.000739
Parking Lot	0.559358	0.040058	0.190549	0.109335	0.016678	0.005213	0.023344	0.044042	0.002152	0.002669	0.005545	0.000316	0.000739

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Install High Efficiency Lighting

Install Energy Efficient Appliances

	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 Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	124.6331	124.6331	0.0125	2.5800e-003	125.7131
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	137.2644	137.2644	0.0137	2.8400e-003	138.4539
NaturalGas Mitigated	0.0198	0.1691	0.0720	1.0800e-003		0.0137	0.0137		0.0137	0.0137	0.0000	195.8297	195.8297	3.7500e-003	3.5900e-003	196.9934

NaturalGas Unmitigated	0.0198	0.1691	0.0720	1.0800e-003		0.0137	0.0137		0.0137	0.0137	0.0000	195.8297	195.8297	3.7500e-003	3.5900e-003	196.9934

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					
Condo/Townhouse	3.66971e+006	0.0198	0.1691	0.0720	1.0800e-003		0.0137	0.0137		0.0137	0.0137	0.0000	195.8297	195.8297	3.7500e-003	3.5900e-003	196.9934
Parking Lot	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
Total		**0.0198**	**0.1691**	**0.0720**	**1.0800e-003**		**0.0137**	**0.0137**		**0.0137**	**0.0137**	**0.0000**	**195.8297**	**195.8297**	**3.7500e-003**	**3.5900e-003**	**196.9934**

Mitigated

	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					
Condo/Townhouse	3.66971e+006	0.0198	0.1691	0.0720	1.0800e-003		0.0137	0.0137		0.0137	0.0137	0.0000	195.8297	195.8297	3.7500e-003	3.5900e-003	196.9934
Parking Lot	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
Total		**0.0198**	**0.1691**	**0.0720**	**1.0800e-003**		**0.0137**	**0.0137**		**0.0137**	**0.0137**	**0.0000**	**195.8297**	**195.8297**	**3.7500e-003**	**3.5900e-003**	**196.9934**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Condo/Townhouse	988904	130.0822	0.0130	2.6900e-003	131.2095
Parking Lot	54600	7.1822	7.2000e-004	1.5000e-004	7.2444
Total		**137.2644**	**0.0137**	**2.8400e-003**	**138.4539**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Condo/Townhouse	908167	119.4619	0.0120	2.4700e-003	120.4971
Parking Lot	39312	5.1712	5.2000e-004	1.1000e-004	5.2160
Total		**124.6331**	**0.0125**	**2.5800e-003**	**125.7131**

6.0 Area Detail

6.1 Mitigation Measures Area

Use only Natural Gas Hearths

	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					
Mitigated	1.5798	0.0237	1.4650	1.2000e-004		8.6000e-003	8.6000e-003		8.6000e-003	8.6000e-003	0.0000	10.2491	10.2491	2.4700e-003	1.4000e-004	10.3539
Unmitigated	1.5798	0.0237	1.4650	1.2000e-004		8.6000e-003	8.6000e-003		8.6000e-003	8.6000e-003	0.0000	10.2491	10.2491	2.4700e-003	1.4000e-004	10.3539

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	0.2356					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.2989					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	7.9000e-004	6.7900e-003	2.8900e-003	4.0000e-005		5.5000e-004	5.5000e-004		5.5000e-004	5.5000e-004	0.0000	7.8649	7.8649	1.5000e-004	1.4000e-004	7.9116
Landscaping	0.0445	0.0169	1.4621	8.0000e-005		8.0500e-003	8.0500e-003		8.0500e-003	8.0500e-003	0.0000	2.3842	2.3842	2.3200e-003	0.0000	2.4423
Total	**1.5798**	**0.0237**	**1.4650**	**1.2000e-004**		**8.6000e-003**	**8.6000e-003**		**8.6000e-003**	**8.6000e-003**	**0.0000**	**10.2491**	**10.2491**	**2.4700e-003**	**1.4000e-004**	**10.3539**

Mitigated

	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	0.2356					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.2989					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Hearth	7.9000e-004	6.7900e-003	2.8900e-003	4.0000e-005		5.5000e-004	5.5000e-004		5.5000e-004	5.5000e-004	0.0000	7.8649	7.8649	1.5000e-004	1.4000e-004	7.9116
Landscaping	0.0445	0.0169	1.4621	8.0000e-005		8.0500e-003	8.0500e-003		8.0500e-003	8.0500e-003	0.0000	2.3842	2.3842	2.3200e-003	0.0000	2.4423
Total	**1.5798**	**0.0237**	**1.4650**	**1.2000e-004**		**8.6000e-003**	**8.6000e-003**		**8.6000e-003**	**8.6000e-003**	**0.0000**	**10.2491**	**10.2491**	**2.4700e-003**	**1.4000e-004**	**10.3539**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	14.3665	0.0135	8.0800e-003	17.1131
Unmitigated	17.3141	0.0168	0.0101	20.7418

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e

Land Use	Mgal	MT/yr			
Condo/Townhouse	12.7702 / 8.05077	17.3141	0.0168	0.0101	20.7418
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**17.3141**	**0.0168**	**0.0101**	**20.7418**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Condo/Townhouse	10.2162 / 7.55967	14.3665	0.0135	8.0800e-003	17.1131
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**14.3665**	**0.0135**	**8.0800e-003**	**17.1131**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	18.3017	1.0816	0.0000	45.3416

Unmitigated	18.3017	1.0816	0.0000	45.3416

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Condo/Townhouse	90.16	18.3017	1.0816	0.0000	45.3416
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**18.3017**	**1.0816**	**0.0000**	**45.3416**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Condo/Townhouse	90.16	18.3017	1.0816	0.0000	45.3416
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**18.3017**	**1.0816**	**0.0000**	**45.3416**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Project Name:	Lassen Road							Complete ALL Portions in Yellow
	See Equipment Type TAB for type, horsepower and load factor							
	Project Size	196	Dwelling Units	13	total project acres disturbed			
		330,000	s.f. residential					
			s.f. retail					
			s.f. office/commercial					
			s.f. other, specify:					
			s.f. parking garage	70	spaces	site		
			s.f. parking lot	390	spaces	garage		
	Construction Hours		am to		pm			

Qty	Description	HP	Load Factor	Hours/day	Total Work Days	Avg. Hours per day	Annual Hours	Comments
	Demolition	**Start Date:**	**e.g., 3/15/2019**	**Total phase:**	**5**			**Overall Import/Export Volumes**
		End Date:	**3/20/2019**					
0	Concrete/Industrial Saws	81	0.73			0	0	**Demolition Volume**
0	Excavators	158	0.38			0	0	Square footage of buildings to be demolished
0	Rubber-Tired Dozers	247	0.4			0	0	(*or* total tons to be hauled)
0	Tractors/Loaders/Backhoes	97	0.37			0	0	**0** square feet *or*
								0 Hauling volume (tons)
	Site Preperation	**Start Date:**	**3/21/2019**	**Total phase:**	**5**			Any pavement demolished and hauled? **0 tons**
		End Date:	**3/26/2019**					
0	Graders	174	0.41			0	0	
3	Rubber Tired Dozers	247	0.4			0	0	
4	Tractors/Loaders/Backhoes	97	0.37			0	0	
	Grading / Excavation	**Start Date:**	**3/27/2019**	**Total phase:**	**65**			
		End Date:	**7/1/2019**					**Soil Hauling Volume**
2	Excavators	158	0.38			0	0	Export volume = **0** cubic yards?
1	Graders	187	0.41			0	0	Import volume = **0** cubic yards?
1	Rubber Tired Dozers	247	0.4			0	0	
2	Scrappers	367	0.73			0	0	Total Earthwork = 140,000 cubic yards
2	Tractors/Loaders/Backhoes	97	0.37			0	0	
	Other Equipment?							
	Trenching	**Start Date:**	**7/2/2019**	**Total phase:**	**65**			
		End Date:	**9/31/2019**					
1	Tractor/Loader/Backhoe	97	0.37			0	0	
1	Excavators	162	0.38			0		
	Other Equipment?							
	Building - Exterior	**Start Date:**	**8/24/2019**	**Total phase:**	**265**			**Cement Trucks? ? Total Round-Trips**
		End Date:	**8/20/2020**					
1	Cranes	231	0.29			0	0	Electric? (Y/N) ___ Otherwise assumed diesel
3	Forklifts	89	0.2			0	0	Liquid Propane (LPG)? (Y/N) Otherwise Assumed diesel
1	Generator Sets	84	0.74			0	0	Or temporary line power? (Y/N)
3	Tractors/Loaders/Backhoes	97	0.37			0	0	
1	Welders	46	0.45			0	0	
	Other Equipment?					0		
	Building - Interior/Architectural Coating	**Start Date:**	**11/24/2019**	**Total phase:**	**180**			
		End Date:	**7/21/2020**					
1	Air Compressors	78	0.48			0	0	
	Aerial Lift	62	0.31			0	0	
	Other Equipment?							
	Paving	**Start Date:**	**11/1/2019**	**Total phase:**	**22**			
		Start Date:	**12/1/2019**					
0	Cement and Mortar Mixers	9	0.56			0	0	
2	Pavers	130	0.42			0	0	**Asphalt? 1400 cubic yards or ____ round trips? Portland**
2	Paving Equipment	132	0.36			0	0	**Cement Concrete 750 cubic yards**
2	Rollers	80	0.38			0	0	
0	Tractors/Loaders/Backhoes	97	0.37			0	0	
	Other Equipment?							

Lassen Road - Alameda County, Annual

Lassen Road

Alameda County, Annual

2030 GHG Emissions

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	390.00	Space	0.00	156,000.00	0
Condo/Townhouse	196.00	Dwelling Unit	13.00	330,000.00	561

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	4			**Operational Year**	2030
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Based on provided construciton info

Land Use - Based on provided construction data - and US cesus = 2.80 pphh

Construction Phase - Based on provided construciton information

Off-road Equipment -

Off-road Equipment -

Off-road Equipment - Based on provided construction information

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment - Based on provided construction information

Trips and VMT -

Demolition -

Grading - on-site earthwork

Woodstoves - no woodburning

Energy Use -

Water And Wastewater - wastewater treatment plant

Solid Waste -

Construction Off-road Equipment Mitigation - Tier 2 mobile/Tier 4i portable/BMPs

Area Mitigation - no wood burning

Energy Mitigation - High efficiency lighting

Water Mitigation - Basic water conservation

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	10.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
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
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	20.00	180.00
tblConstructionPhase	NumDays	300.00	265.00
tblConstructionPhase	NumDays	20.00	5.00
tblConstructionPhase	NumDays	30.00	65.00
tblConstructionPhase	NumDays	20.00	22.00
tblConstructionPhase	NumDays	10.00	5.00
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	29.40	63.00
tblFireplaces	NumberWood	33.32	0.00

tblGrading	MaterialExported	0.00	140,000.00
tblLandUse	LandUseSquareFeet	196,000.00	330,000.00
tblLandUse	LotAcreage	3.51	0.00
tblLandUse	LotAcreage	12.25	13.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWoodstoves	WoodstoveWoodMass	582.40	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	1.5790	0.0236	1.4579	1.2000e-004		8.6300e-003	8.6300e-003		8.6300e-003	8.6300e-003	0.0000	10.2491	10.2491	2.4300e-003	1.4000e-004	10.3529
Energy	0.0198	0.1691	0.0720	1.0800e-003		0.0137	0.0137		0.0137	0.0137	0.0000	333.0941	333.0941	0.0175	6.4300e-003	335.4473
Mobile	0.1879	1.4452	2.0191	0.0103	0.9561	6.4300e-003	0.9626	0.2568	6.0000e-003	0.2628	0.0000	956.8327	956.8327	0.0353	0.0000	957.7142
Waste						0.0000	0.0000		0.0000	0.0000	18.3017	0.0000	18.3017	1.0816	0.0000	45.3416
Water						0.0000	0.0000		0.0000	0.0000	4.5181	12.7960	17.3141	0.0168	0.0101	20.7418

Total	**1.7867**	**1.6378**	**3.5490**	**0.0115**	**0.9561**	**0.0287**	**0.9849**	**0.2568**	**0.0283**	**0.2851**	**22.8198**	**1,312.9719**	**1,335.7917**	**1.1536**	**0.0167**	**1,369.5978**

Mitigated 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	1.5790	0.0236	1.4579	1.2000e-004		8.6300e-003	8.6300e-003		8.6300e-003	8.6300e-003	0.0000	10.2491	10.2491	2.4300e-003	1.4000e-004	10.3529
Energy	0.0198	0.1691	0.0720	1.0800e-003		0.0137	0.0137		0.0137	0.0137	0.0000	320.4628	320.4628	0.0162	6.1700e-003	322.7065
Mobile	0.1879	1.4452	2.0191	0.0103	0.9561	6.4300e-003	0.9626	0.2568	6.0000e-003	0.2628	0.0000	956.8327	956.8327	0.0353	0.0000	957.7142
Waste						0.0000	0.0000		0.0000	0.0000	18.3017	0.0000	18.3017	1.0816	0.0000	45.3416
Water						0.0000	0.0000		0.0000	0.0000	3.6145	10.7520	14.3665	0.0135	8.0800e-003	17.1131
Total	**1.7867**	**1.6378**	**3.5490**	**0.0115**	**0.9561**	**0.0287**	**0.9849**	**0.2568**	**0.0283**	**0.2851**	**21.9162**	**1,298.2966**	**1,320.2127**	**1.1490**	**0.0144**	**1,353.2284**

	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	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**3.96**	**1.12**	**1.17**	**0.40**	**13.63**	**1.20**

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					
Mitigated	0.1879	1.4452	2.0191	0.0103	0.9561	6.4300e-003	0.9626	0.2568	6.0000e-003	0.2628	0.0000	956.8327	956.8327	0.0353	0.0000	957.7142
Unmitigated	0.1879	1.4452	2.0191	0.0103	0.9561	6.4300e-003	0.9626	0.2568	6.0000e-003	0.2628	0.0000	956.8327	956.8327	0.0353	0.0000	957.7142

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Condo/Townhouse	1,138.76	1,111.32	948.64	2,558,306	2,558,306
Parking Lot	0.00	0.00	0.00		
Total	1,138.76	1,111.32	948.64	2,558,306	2,558,306

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-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Condo/Townhouse	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Condo/Townhouse	0.566339	0.035990	0.189848	0.102849	0.012430	0.005068	0.026569	0.050520	0.002280	0.001770	0.005305	0.000389	0.000644
Parking Lot	0.566339	0.035990	0.189848	0.102849	0.012430	0.005068	0.026569	0.050520	0.002280	0.001770	0.005305	0.000389	0.000644

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Install High Efficiency Lighting

Install Energy Efficient Appliances

	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 Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	124.6331	124.6331	0.0125	2.5800e-003	125.7131
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	137.2644	137.2644	0.0137	2.8400e-003	138.4539
NaturalGas Mitigated	0.0198	0.1691	0.0720	1.0800e-003		0.0137	0.0137		0.0137	0.0137	0.0000	195.8297	195.8297	3.7500e-003	3.5900e-003	196.9934
NaturalGas Unmitigated	0.0198	0.1691	0.0720	1.0800e-003		0.0137	0.0137		0.0137	0.0137	0.0000	195.8297	195.8297	3.7500e-003	3.5900e-003	196.9934

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					
Condo/Townhouse	3.66971e+006	0.0198	0.1691	0.0720	1.0800e-003		0.0137	0.0137		0.0137	0.0137	0.0000	195.8297	195.8297	3.7500e-003	3.5900e-003	196.9934
Parking Lot	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
Total		**0.0198**	**0.1691**	**0.0720**	**1.0800e-003**		**0.0137**	**0.0137**		**0.0137**	**0.0137**	**0.0000**	**195.8297**	**195.8297**	**3.7500e-003**	**3.5900e-003**	**196.9934**

Mitigated

	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					
Condo/Townhouse	3.66971e+006	0.0198	0.1691	0.0720	1.0800e-003		0.0137	0.0137		0.0137	0.0137	0.0000	195.8297	195.8297	3.7500e-003	3.5900e-003	196.9934
Parking Lot	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
Total		**0.0198**	**0.1691**	**0.0720**	**1.0800e-003**		**0.0137**	**0.0137**		**0.0137**	**0.0137**	**0.0000**	**195.8297**	**195.8297**	**3.7500e-003**	**3.5900e-003**	**196.9934**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Condo/Townhouse	988904	130.0822	0.0130	2.6900e-003	131.2095
Parking Lot	54600	7.1822	7.2000e-004	1.5000e-004	7.2444
Total		**137.2644**	**0.0137**	**2.8400e-003**	**138.4539**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Condo/Townhouse	908167	119.4619	0.0120	2.4700e-003	120.4971
Parking Lot	39312	5.1712	5.2000e-004	1.1000e-004	5.2160
Total		**124.6331**	**0.0125**	**2.5800e-003**	**125.7131**

6.0 Area Detail

6.1 Mitigation Measures Area

Use only Natural Gas Hearths

	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					
Mitigated	1.5790	0.0236	1.4579	1.2000e-004		8.6300e-003	8.6300e-003		8.6300e-003	8.6300e-003	0.0000	10.2491	10.2491	2.4300e-003	1.4000e-004	10.3529
Unmitigated	1.5790	0.0236	1.4579	1.2000e-004		8.6300e-003	8.6300e-003		8.6300e-003	8.6300e-003	0.0000	10.2491	10.2491	2.4300e-003	1.4000e-004	10.3529

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	0.2356					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.2989					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	7.9000e-004	6.7900e-003	2.8900e-003	4.0000e-005		5.5000e-004	5.5000e-004		5.5000e-004	5.5000e-004	0.0000	7.8649	7.8649	1.5000e-004	1.4000e-004	7.9116
Landscaping	0.0437	0.0168	1.4550	8.0000e-005		8.0800e-003	8.0800e-003		8.0800e-003	8.0800e-003	0.0000	2.3842	2.3842	2.2800e-003	0.0000	2.4413
Total	**1.5790**	**0.0236**	**1.4579**	**1.2000e-004**		**8.6300e-003**	**8.6300e-003**		**8.6300e-003**	**8.6300e-003**	**0.0000**	**10.2491**	**10.2491**	**2.4300e-003**	**1.4000e-004**	**10.3529**

Mitigated

	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	0.2356					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.2989					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	7.9000e-004	6.7900e-003	2.8900e-003	4.0000e-005		5.5000e-004	5.5000e-004		5.5000e-004	5.5000e-004	0.0000	7.8649	7.8649	1.5000e-004	1.4000e-004	7.9116
Landscaping	0.0437	0.0168	1.4550	8.0000e-005		8.0800e-003	8.0800e-003		8.0800e-003	8.0800e-003	0.0000	2.3842	2.3842	2.2800e-003	0.0000	2.4413
Total	**1.5790**	**0.0236**	**1.4579**	**1.2000e-004**		**8.6300e-003**	**8.6300e-003**		**8.6300e-003**	**8.6300e-003**	**0.0000**	**10.2491**	**10.2491**	**2.4300e-003**	**1.4000e-004**	**10.3529**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	14.3665	0.0135	8.0800e-003	17.1131

Unmitigated	17.3141	0.0168	0.0101	20.7418

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Condo/Townhouse	12.7702 / 8.05077	17.3141	0.0168	0.0101	20.7418
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**17.3141**	**0.0168**	**0.0101**	**20.7418**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Condo/Townhouse	10.2162 / 7.55967	14.3665	0.0135	8.0800e-003	17.1131
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**14.3665**	**0.0135**	**8.0800e-003**	**17.1131**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	18.3017	1.0816	0.0000	45.3416
Unmitigated	18.3017	1.0816	0.0000	45.3416

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Condo/Townhouse	90.16	18.3017	1.0816	0.0000	45.3416
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**18.3017**	**1.0816**	**0.0000**	**45.3416**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			

Condo/Townhouse	90.16	18.3017	1.0816	0.0000	45.3416
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**18.3017**	**1.0816**	**0.0000**	**45.3416**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Attachment 2: Health Risk Calculation Methodology

A health risk assessment (HRA) for exposure to Toxic Air Contaminates (TACs) requires the application of a risk characterization model to the results from the air dispersion model to estimate potential health risk at each sensitive receptor location. The State of California Office of Environmental Health Hazard Assessment (OEHHA) and California Air Resources Board (CARB) develop recommended methods for conducting health risk assessments. The most recent OEHHA risk assessment guidelines were published in February of 2015.[17] 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.[18] This HRA used the recent 2015 OEHHA risk assessment guidelines and CARB guidance. The BAAQMD has adopted recommended procedures for applying the newest OEHHA guidelines as part of Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants.[19] Exposure parameters from the OEHHA guidelines and the recent BAAQMD HRA Guidelines were used in this evaluation.

Cancer Risk

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

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

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

[17] 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.
[18] CARB, 2015. *Risk Management Guidance for Stationary Sources of Air Toxics*. July 23.
[19] BAAQMD, 2016. *BAAQMD Air Toxics NSR Program Health Risk Assessment (HRA) Guidelines*. January 2016.

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

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

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

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

Non-Cancer Hazards

Potential non-cancer health hazards from TAC exposure are expressed in terms of a hazard index (HI), which is the ratio of the TAC concentration to a reference exposure level (REL). OEHHA has defined acceptable concentration levels for contaminants that pose non-cancer health hazards. TAC concentrations below the REL are not expected to cause adverse health impacts, even for sensitive individuals. The total HI is calculated as the sum of the HIs for each TAC evaluated and the total HI is compared to the BAAQMD significance thresholds to determine whether a significant non-cancer health impact from a project would occur. Typically, for residential projects located near roadways with substantial TAC emissions, the primary TAC of concern with non-cancer health effects is diesel particulate matter (DPM). For DPM, the chronic inhalation REL is 5 micrograms per cubic meter ($\mu g/m^3$).

Annual $PM_{2.5}$ Concentrations

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

Attachment 3: Construction Health Risk Assessment Modeling Information Including CalEEMod Output for On- and Near-Site Sources

Lassen Road, Livermore, CA

DPM Emissions and Modeling Emission Rates - Unmitigated

Emissions Model Year	Construction Area	DPM (ton/year)	Area Source	DPM Emissions (lb/yr)	DPM Emissions (lb/hr)	DPM Emissions (g/s)	Modeled Area (m^2)	DPM Emission Rate ($g/s/m^2$)
2019	Area 1	0.0621	CON1_DPM	124.3	0.03783	4.77E-03	28,920	1.65E-07
	Area 2	0.0451	CON2_DPM	90.3	0.02748	3.46E-03	21,008	1.65E-07
	Area 3	0.0388	CON3_DPM	77.6	0.02362	2.98E-03	18,061	1.65E-07
	Area 4	0.0199	CON4_DPM	39.9	0.01214	1.53E-03	9,281	1.65E-07
	Total	***0.1660***		***332.0***	***0.10107***	***1.27E-02***	***77,270***	
2020	Area 1	0.0396	CON1_DPM	79.2	0.02411	3.04E-03	28,920	1.05E-07
	Area 2	0.0288	CON2_DPM	57.5	0.01751	2.21E-03	21,008	1.05E-07
	Area 3	0.0247	CON3_DPM	49.5	0.01506	1.90E-03	18,061	1.05E-07
	Area 4	0.0127	CON4_DPM	25.4	0.00774	9.75E-04	9,281	1.05E-07
	Total	***0.1058***		***211.6***	***0.06441***	***8.12E-03***	***77,270***	
Total		***0.2718***		***543.6***				

Operation Hours

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

PM2.5 Fugitive Dust Emissions for Modeling - Unmitigated

Construction Year	Construction Area	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 $g/s/m^2$
2019	Area 1	CON1_FUG	0.0553	110.6	0.03368	4.24E-03	28,920	1.47E-07
	Area 2	CON2_FUG	0.0402	80.4	0.02446	3.08E-03	21,008	1.47E-07
	Area 3	CON3_FUG	0.0345	69.1	0.02103	2.65E-03	18,061	1.47E-07
	Area 4	CON4_FUG	0.0178	35.5	0.01081	1.36E-03	9,281	1.47E-07
	Total		***0.1478***	***295.6***	***0.08998***	***1.13E-02***	***77,270***	
2020	Area 1	CON1_FUG	0.00197	3.9	0.00120	1.51E-04	28,920	5.23E-09
	Area 2	CON2_FUG	0.00143	2.9	0.00087	1.10E-04	21,008	5.23E-09
	Area 3	CON3_FUG	0.00123	2.5	0.00075	9.45E-05	18,061	5.23E-09
	Area 4	CON4_FUG	0.00063	1.3	0.00039	4.86E-05	9,281	5.23E-09
	Total		***0.00527***	***10.5***	***0.00321***	***4.04E-04***	***77,270***	
Total			***0.1531***	***306.1***				

Operation Hours

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

DPM Construction Emissions and Modeling Emission Rates - With Mitigation

Emissions Model Year	Construction Area	DPM (ton/year)	Area Source	DPM Emissions (lb/yr)	DPM Emissions (lb/hr)	DPM Emissions (g/s)	Modeled Area (m^2)	DPM Emission Rate ($g/s/m^2$)
2019	Area 1	0.0065	CON1_DPM	13.0	0.00396	5.00E-04	28,920	1.73E-08
	Area 2	0.0047	CON2_DPM	9.5	0.00288	3.63E-04	21,008	1.73E-08
	Area 3	0.0041	CON3_DPM	8.1	0.00248	3.12E-04	18,061	1.73E-08
	Area 4	0.0021	CON4_DPM	4.2	0.00127	1.60E-04	9,281	1.73E-08
	Total	***0.0174***		***34.8***	***0.01059***	***1.33E-03***	***77,270***	
2020	Area 1	0.0050	CON1_DPM	10.0	0.00305	3.85E-04	28,920	1.33E-08
	Area 2	0.0036	CON2_DPM	7.3	0.00222	2.79E-04	21,008	1.33E-08
	Area 3	0.0031	CON3_DPM	6.3	0.00191	2.40E-04	18,061	1.33E-08
	Area 4	0.0016	CON4_DPM	3.2	0.00098	1.23E-04	9,281	1.33E-08
	Total	***0.0134***		***26.8***	***0.00816***	***1.03E-03***	***77,270***	
Total		***0.0308***		***61.6***				

Operation Hours

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

PM2.5 Fugitive Dust Construction Emissions for Modeling - With Mitigation

Construction Year	Construction Area	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 $g/s/m^2$
2019	Area 1	CON1_FUG	0.0259	51.8	0.01577	1.99E-03	28,920	6.87E-08
	Area 2	CON2_FUG	0.0188	37.6	0.01145	1.44E-03	21,008	6.87E-08
	Area 3	CON3_FUG	0.0162	32.3	0.00985	1.24E-03	18,061	6.87E-08
	Area 4	CON4_FUG	0.0083	16.6	0.00506	6.38E-04	9,281	6.87E-08
	Total		***0.0692***	***138.4***	***0.04213***	***5.31E-03***	***77,270***	
2020	Area 1	CON1_FUG	0.00197	3.9	0.00120	1.51E-04	28,920	5.23E-09
	Area 2	CON2_FUG	0.00143	2.9	0.00087	1.10E-04	21,008	5.23E-09
	Area 3	CON3_FUG	0.00123	2.5	0.00075	9.45E-05	18,061	5.23E-09
	Area 4	CON4_FUG	0.00063	1.3	0.00039	4.86E-05	9,281	5.23E-09
	Total		***0.00527***	***10.5***	***0.00321***	***4.04E-04***	***77,270***	
Total			***0.0745***	***148.9***				

Operation Hours

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

Lassen Road, Livermore, CA
Construction Health Impacts Summary

Maximum Residential Impacts at Construction MEI Location - Unmitigated

Emissions Year	Maximum Concentrations: Exhaust PM10/DPM ($\mu g/m^3$)	Maximum Concentrations: Fugitive PM2.5 ($\mu g/m^3$)	Cancer Risk (per million): Child	Cancer Risk (per million): Adult	Hazard Index (-)	Maximum Annual PM2.5 Concentration ($\mu g/m^3$)
2019	0.0346	0.0333	5.7	0.1	0.007	0.07
2020	0.0220	0.0012	3.6	0.1	0.004	0.02
Total	-	-	**9.3**	**0.2**		
Maximum	0.0346	0.0333	-	-	**0.007**	**0.07**

Maximum Residential Impacts at Construction MEI Location - With Mitigation

Emissions Year	Maximum Concentrations: Exhaust PM10/DPM ($\mu g/m^3$)	Maximum Concentrations: Fugitive PM2.5 ($\mu g/m^3$)	Cancer Risk (per million): Child	Cancer Risk (per million): Adult	Hazard Index (-)	Maximum Annual PM2.5 Concentration ($\mu g/m^3$)
2019	0.0036	0.0155	0.6	0.0	0.001	0.02
2020	0.0028	0.0012	0.5	0.0	0.001	0.00
Total	-	-	**1.1**	**0.0**		
Maximum	0.0036	0.0155	-	-	**0.001**	**0.02**

Maximum Construction Impacts at KinderCare Preschool - Unmitigated

Emissions Year	Maximum Concentrations: Exhaust PM10/DPM ($\mu g/m^3$)	Maximum Concentrations: Fugitive PM2.5 ($\mu g/m^3$)	Cancer Risk (per million): Infant	Cancer Risk (per million): -	Hazard Index (-)	Maximum Annual PM2.5 Concentration ($\mu g/m^3$)
2019	0.1024	0.1286	16.8	-	0.020	0.23
2020	0.0652	0.0046	10.7	-	0.013	0.07
Total	-	-	**27.5**			
Maximum	0.1024	0.1286	-	-	**0.020**	**0.23**

Maximum Construction Impacts at KinderCare Preschool - Mitigated

Emissions Year	Maximum Concentrations: Exhaust PM10/DPM ($\mu g/m^3$)	Maximum Concentrations: Fugitive PM2.5 ($\mu g/m^3$)	Cancer Risk (per million): Infant	Cancer Risk (per million): -	Hazard Index (-)	Maximum Annual PM2.5 Concentration ($\mu g/m^3$)
2019	0.0107	0.0601	1.8	-	0.002	0.07
2020	0.0083	0.0046	1.4	-	0.002	0.01
Total	-	-	**3.1**	-		
Maximum	0.0107	0.0601	-	-	**0.002**	**0.07**

Lassen Road, Livermore, CA - Without Mitigation
Maximum DPM Cancer Risk Calculations From Construction
KinderCare Preschool Receptors - 1.0 meters - Infant Exposures

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 - 9**	**2 - 16**	**16 - 30**
Parameter					
ASF =	10	10	3	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	631	572	261
A =	1	1	1	1	1
EF =	350	350	350	350	350
AT =	70	70	70	70	70
FAH =	1.00	1.00	1.00	1.00	0.73

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

Construction Cancer Risk by Year - Maximum Impact Receptor Location

		Preschool - Exposure Information					
		DPM Conc (ug/m3)		Age*	Student		
Exposure Year	**Exposure Duration (years)**	**Year**	**Annual**	**Sensitivity Factor**	**Cancer Risk (per million)**	**Fugitive PM2.5**	**Total PM2.5**
1	1	2019	0.1024	10	16.8	0.1286	0.231
2	1	2020	0.0652	10	10.7	0.0046	0.070
Total					**27.5**		

* Infants at Preschool assumed to be from 0 to 2 years of age

Lassen Road, Livermore, CA - With Mitigation
Maximum DPM Cancer Risk Calculations From Construction
KinderCare Preschool Receptors - 1.0 meters - Infant Exposures

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 - 9**	**2 - 16**	**16 - 30**
Parameter					
ASF =	10	10	3	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	631	572	261
A =	1	1	1	1	1
EF =	350	350	350	350	350
AT =	70	70	70	70	70
FAH =	1.00	1.00	1.00	1.00	0.73

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

Construction Cancer Risk by Year - Maximum Impact Receptor Location

		Preschool - Exposure Information					
		DPM Conc (ug/m3)		Age*	Student Cancer		
Exposure Year	**Exposure Duration (years)**	**Year**	**Annual**	**Sensitivity Factor**	**Risk (per million)**	**Fugitive PM2.5**	**Total PM2.5**
1	1	2019	0.0107	10	1.8	0.0601	0.071
2	1	2020	0.0083	10	1.4	0.0046	0.013
Total					**3.1**		

* Infants at Preschool assumed to be from 0 to 2 years of age

Lassen Road, Livermore, CA - Without Mitigation
Maximum DPM Cancer Risk Calculations From Construction
Impacts at Off-Site Receptors-1.5 meter

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 - 9**	**2 - 16**	**16 - 30**
Parameter					
ASF =	10	10	3	3	1
CPF =	1.10E+00	1.10E+00	1.10E+00	1.10E+00	1.10E+00
DBR* =	361	1090	631	572	261
A =	1	1	1	1	1
EF =	350	350	350	350	350
AT =	70	70	70	70	70
FAH =	1.00	1.00	1.00	1.00	0.73

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

Construction Cancer Risk by Year - Maximum Impact Receptor Location

			Infant/Child - Exposure Information				Adult - Exposure Information					
							Modeled					
Exposure Year	**Exposure Duration (years)**	**Age**	**DPM Conc (ug/m3) Year**	**DPM Conc (ug/m3) Annual**	**Age Sensitivity Factor**	**Infant/Child Cancer Risk (per million)**	**DPM Conc (ug/m3) Year**	**DPM Conc (ug/m3) Annual**	**Age Sensitivity Factor**	**Adult Cancer Risk (per million)**	**Fugitive PM2.5**	**Total PM2.5**
0	0.25	-0.25 - 0*	-	-	10	-	-	-	-	-		
1	1	0 - 1	2019	0.0346	10	5.69	2019	0.0346	1	0.10	0.0333	0.068
2	1	1 - 2	2020	0.0220	10	3.62	2020	0.0220	1	0.06	0.0012	0.023
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						**9.3**				**0.16**		

* Third trimester of pregnancy

Lassen Road - Alameda County, Annual

Lassen Road

Alameda County, Annual

TAC Analysis

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Condo/Townhouse	196.00	Dwelling Unit	13.00	330,000.00	561
Parking Lot	390.00	Space	0.00	156,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	4			**Operational Year**	2021
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Based on provided construciton info

Land Use - Based on provided construction data - and US cesus = 2.80 pphh

Construction Phase - Based on provided construciton information

Off-road Equipment - Based on provided construction information

Grading - on-site earthwork

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment -

Off-road Equipment - Based on provided construction information

Demolition -

Trips and VMT - on- and near site

Woodstoves - no woodburning

Energy Use -

Water And Wastewater - wastewater treatment plant

Solid Waste -

Construction Off-road Equipment Mitigation - Tier 2 mobile/Tier 4i portable/BMPs

Area Mitigation - no wood burning

Energy Mitigation - High efficiency lighting

Water Mitigation - Basic water conservation

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	10.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
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
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 2
tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
tblConstructionPhase	NumDays	20.00	180.00
tblConstructionPhase	NumDays	300.00	265.00
tblConstructionPhase	NumDays	20.00	5.00
tblConstructionPhase	NumDays	30.00	65.00
tblConstructionPhase	NumDays	20.00	22.00
tblConstructionPhase	NumDays	10.00	5.00
tblConstructionPhase	PhaseEndDate	9/24/2020	7/31/2020
tblConstructionPhase	PhaseEndDate	7/30/2020	8/28/2020
tblConstructionPhase	PhaseEndDate	4/11/2019	3/21/2019

tblConstructionPhase	PhaseEndDate	6/6/2019	6/25/2019
tblConstructionPhase	PhaseEndDate	8/27/2020	12/2/2019
tblConstructionPhase	PhaseEndDate	4/25/2019	3/27/2019
tblConstructionPhase	PhaseStartDate	8/28/2020	11/24/2019
tblConstructionPhase	PhaseStartDate	6/7/2019	8/24/2019
tblConstructionPhase	PhaseStartDate	4/26/2019	3/27/2019
tblConstructionPhase	PhaseStartDate	7/31/2020	11/1/2019
tblConstructionPhase	PhaseStartDate	4/12/2019	3/21/2019
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	29.40	63.00
tblFireplaces	NumberWood	33.32	0.00
tblGrading	MaterialExported	0.00	140,000.00
tblLandUse	LandUseSquareFeet	196,000.00	330,000.00
tblLandUse	LotAcreage	12.25	13.00
tblLandUse	LotAcreage	3.51	0.00
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
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	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	10.80	1.00
tblTripsAndVMT	WorkerTripLength	10.80	1.00
tblTripsAndVMT	WorkerTripLength	10.80	1.00
tblTripsAndVMT	WorkerTripLength	10.80	1.00
tblTripsAndVMT	WorkerTripLength	10.80	1.00
tblTripsAndVMT	WorkerTripLength	10.80	1.00
tblTripsAndVMT	WorkerTripLength	10.80	1.00
tblTripsAndVMT	WorkerTripLength	10.80	1.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWoodstoves	WoodstoveWoodMass	582.40	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					
2019	0.7061	4.3882	2.5499	5.4800e-003	0.3528	0.1660	0.5188	0.1478	0.1541	0.3019	0.0000	498.1350	498.1350	0.1258	0.0000	501.2802

2020	2.2369	2.0900	1.8109	3.1100e-003	0.0193	0.1058	0.1251	5.2700e-003	0.1000	0.1052	0.0000	271.8564	271.8564	0.0561	0.0000	273.2577
Maximum	**2.2369**	**4.3882**	**2.5499**	**5.4800e-003**	**0.3528**	**0.1660**	**0.5188**	**0.1478**	**0.1541**	**0.3019**	**0.0000**	**498.1350**	**498.1350**	**0.1258**	**0.0000**	**501.2802**

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					
2019	0.5180	4.3234	2.7455	5.4800e-003	0.1686	0.0174	0.1860	0.0692	0.0173	0.0865	0.0000	498.1346	498.1346	0.1258	0.0000	501.2798
2020	2.1159	2.1701	1.8997	3.1100e-003	0.0193	0.0134	0.0328	5.2700e-003	0.0134	0.0187	0.0000	271.8561	271.8561	0.0561	0.0000	273.2574
Maximum	**2.1159**	**4.3234**	**2.7455**	**5.4800e-003**	**0.1686**	**0.0174**	**0.1860**	**0.0692**	**0.0173**	**0.0865**	**0.0000**	**498.1346**	**498.1346**	**0.1258**	**0.0000**	**501.2798**

	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	**10.50**	**-0.24**	**-6.52**	**0.00**	**49.51**	**88.66**	**66.03**	**51.35**	**87.92**	**74.17**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**3-15-2019**	**6-14-2019**	2.7855	2.5543
2	**6-15-2019**	**9-14-2019**	0.6811	0.6874
3	**9-15-2019**	**12-14-2019**	1.3187	1.3093
4	**12-15-2019**	**3-14-2020**	1.7457	1.7133
5	**3-15-2020**	**6-14-2020**	1.7524	1.7338
6	**6-15-2020**	**9-14-2020**	1.1473	1.1402
		Highest	2.7855	2.5543

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	3/15/2019	3/21/2019	5	5	
2	Site Preparation	Site Preparation	3/21/2019	3/27/2019	5	5	
3	Grading	Grading	3/27/2019	6/25/2019	5	65	
4	Building Construction	Building Construction	8/24/2019	8/28/2020	5	265	
5	Paving	Paving	11/1/2019	12/2/2019	5	22	
6	Building Interior	Architectural Coating	11/24/2019	7/31/2020	5	180	
7	trenching	Trenching	7/2/2019	9/30/2019	5	65	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 162.5

Acres of Paving: 0

Residential Indoor: 668,250; Residential Outdoor: 222,750; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area:

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37

Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Building Interior	Air Compressors	1	6.00	78	0.48
trenching	Tractors/Loaders/Backhoes	1	6.00	97	0.37
trenching	Excavators	1	6.00	158	0.38

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	5	13.00	0.00	0.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	17,500.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	207.00	47.00	0.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	1.00	1.00	1.00	LD_Mix	HDT_Mix	HHDT
Building Interior	1	41.00	0.00	0.00	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

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Use DPF for Construction Equipment

Use Soil Stabilizer

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2019

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	7.6300e-003	0.0805	0.0459	8.0000e-005		3.9100e-003	3.9100e-003		3.6000e-003	3.6000e-003	0.0000	7.3124	7.3124	2.3100e-003	0.0000	7.3703
Total	**7.6300e-003**	**0.0805**	**0.0459**	**8.0000e-005**		**3.9100e-003**	**3.9100e-003**		**3.6000e-003**	**3.6000e-003**	**0.0000**	**7.3124**	**7.3124**	**2.3100e-003**	**0.0000**	**7.3703**

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	4.0000e-005	2.0000e-005	2.6000e-004	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0281	0.0281	0.0000	0.0000	0.0281
Total	**4.0000e-005**	**2.0000e-005**	**2.6000e-004**	**0.0000**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0281**	**0.0281**	**0.0000**	**0.0000**	**0.0281**

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	2.5500e-003	0.0693	0.0520	8.0000e-005		2.7000e-004	2.7000e-004		2.7000e-004	2.7000e-004	0.0000	7.3124	7.3124	2.3100e-003	0.0000	7.3703

Total	**2.5500e-003**	**0.0693**	**0.0520**	**8.0000e-005**		**2.7000e-004**	**2.7000e-004**		**2.7000e-004**	**2.7000e-004**	**0.0000**	**7.3124**	**7.3124**	**2.3100e-003**	**0.0000**	**7.3703**

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	4.0000e-005	2.0000e-005	2.6000e-004	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0281	0.0281	0.0000	0.0000	0.0281
Total	**4.0000e-005**	**2.0000e-005**	**2.6000e-004**	**0.0000**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0281**	**0.0281**	**0.0000**	**0.0000**	**0.0281**

3.3 Site Preparation - 2019

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					0.0452	0.0000	0.0452	0.0248	0.0000	0.0248	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0108	0.1139	0.0552	9.0000e-005		5.9800e-003	5.9800e-003		5.5000e-003	5.5000e-003	0.0000	8.5422	8.5422	2.7000e-003	0.0000	8.6097
Total	**0.0108**	**0.1139**	**0.0552**	**9.0000e-005**	**0.0452**	**5.9800e-003**	**0.0512**	**0.0248**	**5.5000e-003**	**0.0303**	**0.0000**	**8.5422**	**8.5422**	**2.7000e-003**	**0.0000**	**8.6097**

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	6.0000e-005	3.0000e-005	3.7000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0389	0.0389	0.0000	0.0000	0.0389
Total	**6.0000e-005**	**3.0000e-005**	**3.7000e-004**	**0.0000**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0389**	**0.0389**	**0.0000**	**0.0000**	**0.0389**

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					0.0203	0.0000	0.0203	0.0112	0.0000	0.0112	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.0200e-003	0.0843	0.0574	9.0000e-005		3.5000e-004	3.5000e-004		3.5000e-004	3.5000e-004	0.0000	8.5422	8.5422	2.7000e-003	0.0000	8.6097
Total	**3.0200e-003**	**0.0843**	**0.0574**	**9.0000e-005**	**0.0203**	**3.5000e-004**	**0.0207**	**0.0112**	**3.5000e-004**	**0.0115**	**0.0000**	**8.5422**	**8.5422**	**2.7000e-003**	**0.0000**	**8.6097**

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	6.0000e-005	3.0000e-005	3.7000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0389	0.0389	0.0000	0.0000	0.0389
Total	**6.0000e-005**	**3.0000e-005**	**3.7000e-004**	**0.0000**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**0.0000**	**0.0389**	**0.0389**	**0.0000**	**0.0000**	**0.0389**

3.4 Grading - 2019

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					0.2898	0.0000	0.2898	0.1181	0.0000	0.1181	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1540	1.7719	1.0847	2.0200e-003		0.0774	0.0774		0.0712	0.0712	0.0000	181.0293	181.0293	0.0573	0.0000	182.4612
Total	**0.1540**	**1.7719**	**1.0847**	**2.0200e-003**	**0.2898**	**0.0774**	**0.3672**	**0.1181**	**0.0712**	**0.1893**	**0.0000**	**181.0293**	**181.0293**	**0.0573**	**0.0000**	**182.4612**

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	0.0208	0.9696	0.1263	1.2600e-003	7.5900e-003	1.0800e-003	8.6700e-003	2.1000e-003	1.0300e-003	3.1400e-003	0.0000	121.0776	121.0776	0.0207	0.0000	121.5958
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	8.7000e-004	4.2000e-004	5.2900e-003	1.0000e-005	4.8000e-004	1.0000e-005	4.9000e-004	1.3000e-004	1.0000e-005	1.4000e-004	0.0000	0.5612	0.5612	3.0000e-005	0.0000	0.5620
Total	**0.0217**	**0.9700**	**0.1316**	**1.2700e-003**	**8.0700e-003**	**1.0900e-003**	**9.1600e-003**	**2.2300e-003**	**1.0400e-003**	**3.2800e-003**	**0.0000**	**121.6388**	**121.6388**	**0.0208**	**0.0000**	**122.1578**

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					0.1304	0.0000	0.1304	0.0531	0.0000	0.0531	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0588	1.6653	1.1935	2.0200e-003		6.5000e-003	6.5000e-003		6.5000e-003	6.5000e-003	0.0000	181.0291	181.0291	0.0573	0.0000	182.4610
Total	**0.0588**	**1.6653**	**1.1935**	**2.0200e-003**	**0.1304**	**6.5000e-003**	**0.1369**	**0.0531**	**6.5000e-003**	**0.0596**	**0.0000**	**181.0291**	**181.0291**	**0.0573**	**0.0000**	**182.4610**

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	0.0208	0.9696	0.1263	1.2600e-003	7.5900e-003	1.0800e-003	8.6700e-003	2.1000e-003	1.0300e-003	3.1400e-003	0.0000	121.0776	121.0776	0.0207	0.0000	121.5958
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	8.7000e-004	4.2000e-004	5.2900e-003	1.0000e-005	4.8000e-004	1.0000e-005	4.9000e-004	1.3000e-004	1.0000e-005	1.4000e-004	0.0000	0.5612	0.5612	3.0000e-005	0.0000	0.5620
Total	**0.0217**	**0.9700**	**0.1316**	**1.2700e-003**	**8.0700e-003**	**1.0900e-003**	**9.1600e-003**	**2.2300e-003**	**1.0400e-003**	**3.2800e-003**	**0.0000**	**121.6388**	**121.6388**	**0.0208**	**0.0000**	**122.1578**

3.5 Building Construction - 2019

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	0.1086	0.9696	0.7895	1.2400e-003		0.0593	0.0593		0.0558	0.0558	0.0000	108.1479	108.1479	0.0264	0.0000	108.8066
Total	**0.1086**	**0.9696**	**0.7895**	**1.2400e-003**		**0.0593**	**0.0593**		**0.0558**	**0.0558**	**0.0000**	**108.1479**	**108.1479**	**0.0264**	**0.0000**	**108.8066**

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	4.3200e-003	0.1606	0.0357	1.9000e-004	1.9900e-003	3.4000e-004	2.3300e-003	5.8000e-004	3.2000e-004	9.0000e-004	0.0000	18.3139	18.3139	2.7800e-003	0.0000	18.3835
Worker	0.0128	6.1000e-003	0.0775	9.0000e-005	7.0600e-003	1.1000e-004	7.1600e-003	1.8900e-003	1.0000e-004	1.9900e-003	0.0000	8.2215	8.2215	4.3000e-004	0.0000	8.2322
Total	**0.0171**	**0.1667**	**0.1132**	**2.8000e-004**	**9.0500e-003**	**4.5000e-004**	**9.4900e-003**	**2.4700e-003**	**4.2000e-004**	**2.8900e-003**	**0.0000**	**26.5354**	**26.5354**	**3.2100e-003**	**0.0000**	**26.6157**

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	0.0408	0.9505	0.8222	1.2400e-003		6.6300e-003	6.6300e-003		6.6300e-003	6.6300e-003	0.0000	108.1478	108.1478	0.0264	0.0000	108.8065

Total	**0.0408**	**0.9505**	**0.8222**	**1.2400e-003**		**6.6300e-003**	**6.6300e-003**		**6.6300e-003**	**6.6300e-003**	**0.0000**	**108.1478**	**108.1478**	**0.0264**	**0.0000**	**108.8065**

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	4.3200e-003	0.1606	0.0357	1.9000e-004	1.9900e-003	3.4000e-004	2.3300e-003	5.8000e-004	3.2000e-004	9.0000e-004	0.0000	18.3139	18.3139	2.7800e-003	0.0000	18.3835
Worker	0.0128	6.1000e-003	0.0775	9.0000e-005	7.0600e-003	1.1000e-004	7.1600e-003	1.8900e-003	1.0000e-004	1.9900e-003	0.0000	8.2215	8.2215	4.3000e-004	0.0000	8.2322
Total	**0.0171**	**0.1667**	**0.1132**	**2.8000e-004**	**9.0500e-003**	**4.5000e-004**	**9.4900e-003**	**2.4700e-003**	**4.2000e-004**	**2.8900e-003**	**0.0000**	**26.5354**	**26.5354**	**3.2100e-003**	**0.0000**	**26.6157**

3.5 Building Construction - 2020

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	0.1834	1.6596	1.4574	2.3300e-003		0.0966	0.0966		0.0909	0.0909	0.0000	200.3426	200.3426	0.0489	0.0000	201.5646
Total	**0.1834**	**1.6596**	**1.4574**	**2.3300e-003**		**0.0966**	**0.0966**		**0.0909**	**0.0909**	**0.0000**	**200.3426**	**200.3426**	**0.0489**	**0.0000**	**201.5646**

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	7.1400e-003	0.2898	0.0609	3.6000e-004	3.7500e-003	4.3000e-004	4.1800e-003	1.0900e-003	4.1000e-004	1.5000e-003	0.0000	34.3600	34.3600	4.8400e-003	0.0000	34.4809
Worker	0.0218	0.0101	0.1298	1.7000e-004	0.0133	1.9000e-004	0.0135	3.5500e-003	1.8000e-004	3.7300e-003	0.0000	14.9947	14.9947	7.0000e-004	0.0000	15.0123
Total	**0.0289**	**0.2998**	**0.1907**	**5.3000e-004**	**0.0170**	**6.2000e-004**	**0.0176**	**4.6400e-003**	**5.9000e-004**	**5.2300e-003**	**0.0000**	**49.3548**	**49.3548**	**5.5400e-003**	**0.0000**	**49.4932**

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	0.0768	1.7874	1.5461	2.3300e-003		0.0125	0.0125		0.0125	0.0125	0.0000	200.3424	200.3424	0.0489	0.0000	201.5643
Total	**0.0768**	**1.7874**	**1.5461**	**2.3300e-003**		**0.0125**	**0.0125**		**0.0125**	**0.0125**	**0.0000**	**200.3424**	**200.3424**	**0.0489**	**0.0000**	**201.5643**

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	7.1400e-003	0.2898	0.0609	3.6000e-004	3.7500e-003	4.3000e-004	4.1800e-003	1.0900e-003	4.1000e-004	1.5000e-003	0.0000	34.3600	34.3600	4.8400e-003	0.0000	34.4809
Worker	0.0218	0.0101	0.1298	1.7000e-004	0.0133	1.9000e-004	0.0135	3.5500e-003	1.8000e-004	3.7300e-003	0.0000	14.9947	14.9947	7.0000e-004	0.0000	15.0123
Total	**0.0289**	**0.2998**	**0.1907**	**5.3000e-004**	**0.0170**	**6.2000e-004**	**0.0176**	**4.6400e-003**	**5.9000e-004**	**5.2300e-003**	**0.0000**	**49.3548**	**49.3548**	**5.5400e-003**	**0.0000**	**49.4932**

3.6 Paving - 2019

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	0.0160	0.1677	0.1613	2.5000e-004		9.0700e-003	9.0700e-003		8.3400e-003	8.3400e-003	0.0000	22.5227	22.5227	7.1300e-003	0.0000	22.7009
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0160**	**0.1677**	**0.1613**	**2.5000e-004**		**9.0700e-003**	**9.0700e-003**		**8.3400e-003**	**8.3400e-003**	**0.0000**	**22.5227**	**22.5227**	**7.1300e-003**	**0.0000**	**22.7009**

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	2.2000e-004	1.1000e-004	1.3400e-003	0.0000	1.2000e-004	0.0000	1.2000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1425	0.1425	1.0000e-005	0.0000	0.1427
Total	**2.2000e-004**	**1.1000e-004**	**1.3400e-003**	**0.0000**	**1.2000e-004**	**0.0000**	**1.2000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1425**	**0.1425**	**1.0000e-005**	**0.0000**	**0.1427**

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	0.0102	0.2213	0.1903	2.5000e-004		1.1000e-003	1.1000e-003		1.1000e-003	1.1000e-003	0.0000	22.5227	22.5227	7.1300e-003	0.0000	22.7008
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0102**	**0.2213**	**0.1903**	**2.5000e-004**		**1.1000e-003**	**1.1000e-003**		**1.1000e-003**	**1.1000e-003**	**0.0000**	**22.5227**	**22.5227**	**7.1300e-003**	**0.0000**	**22.7008**

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	2.2000e-004	1.1000e-004	1.3400e-003	0.0000	1.2000e-004	0.0000	1.2000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1425	0.1425	1.0000e-005	0.0000	0.1427
Total	**2.2000e-004**	**1.1000e-004**	**1.3400e-003**	**0.0000**	**1.2000e-004**	**0.0000**	**1.2000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1425**	**0.1425**	**1.0000e-005**	**0.0000**	**0.1427**

3.7 Building Interior - 2019

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	0.3533					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.6000e-003	0.0248	0.0249	4.0000e-005		1.7400e-003	1.7400e-003		1.7400e-003	1.7400e-003	0.0000	3.4469	3.4469	2.9000e-004	0.0000	3.4542
Total	**0.3569**	**0.0248**	**0.0249**	**4.0000e-005**		**1.7400e-003**	**1.7400e-003**		**1.7400e-003**	**1.7400e-003**	**0.0000**	**3.4469**	**3.4469**	**2.9000e-004**	**0.0000**	**3.4542**

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	7.4000e-004	3.5000e-004	4.5100e-003	1.0000e-005	4.1000e-004	1.0000e-005	4.2000e-004	1.1000e-004	1.0000e-005	1.2000e-004	0.0000	0.4779	0.4779	2.0000e-005	0.0000	0.4785
Total	**7.4000e-004**	**3.5000e-004**	**4.5100e-003**	**1.0000e-005**	**4.1000e-004**	**1.0000e-005**	**4.2000e-004**	**1.1000e-004**	**1.0000e-005**	**1.2000e-004**	**0.0000**	**0.4779**	**0.4779**	**2.0000e-005**	**0.0000**	**0.4785**

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	0.3533					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Off-Road	7.4000e-004	0.0143	0.0247	4.0000e-005		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005	0.0000	3.4469	3.4469	2.9000e-004	0.0000	3.4542
Total	**0.3541**	**0.0143**	**0.0247**	**4.0000e-005**		**5.0000e-005**	**5.0000e-005**		**5.0000e-005**	**5.0000e-005**	**0.0000**	**3.4469**	**3.4469**	**2.9000e-004**	**0.0000**	**3.4542**

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	7.4000e-004	3.5000e-004	4.5100e-003	1.0000e-005	4.1000e-004	1.0000e-005	4.2000e-004	1.1000e-004	1.0000e-005	1.2000e-004	0.0000	0.4779	0.4779	2.0000e-005	0.0000	0.4785
Total	**7.4000e-004**	**3.5000e-004**	**4.5100e-003**	**1.0000e-005**	**4.1000e-004**	**1.0000e-005**	**4.2000e-004**	**1.1000e-004**	**1.0000e-005**	**1.2000e-004**	**0.0000**	**0.4779**	**0.4779**	**2.0000e-005**	**0.0000**	**0.4785**

3.7 Building Interior - 2020

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	2.0022					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0185	0.1288	0.1401	2.3000e-004		8.4900e-003	8.4900e-003		8.4900e-003	8.4900e-003	0.0000	19.5324	19.5324	1.5100e-003	0.0000	19.5702
Total	**2.0207**	**0.1288**	**0.1401**	**2.3000e-004**		**8.4900e-003**	**8.4900e-003**		**8.4900e-003**	**8.4900e-003**	**0.0000**	**19.5324**	**19.5324**	**1.5100e-003**	**0.0000**	**19.5702**

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	3.8200e-003	1.7600e-003	0.0227	3.0000e-005	2.3200e-003	3.0000e-005	2.3600e-003	6.2000e-004	3.0000e-005	6.5000e-004	0.0000	2.6266	2.6266	1.2000e-004	0.0000	2.6297
Total	**3.8200e-003**	**1.7600e-003**	**0.0227**	**3.0000e-005**	**2.3200e-003**	**3.0000e-005**	**2.3600e-003**	**6.2000e-004**	**3.0000e-005**	**6.5000e-004**	**0.0000**	**2.6266**	**2.6266**	**1.2000e-004**	**0.0000**	**2.6297**

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	2.0022					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.1700e-003	0.0811	0.1402	2.3000e-004		3.0000e-004	3.0000e-004		3.0000e-004	3.0000e-004	0.0000	19.5324	19.5324	1.5100e-003	0.0000	19.5702
Total	**2.0064**	**0.0811**	**0.1402**	**2.3000e-004**		**3.0000e-004**	**3.0000e-004**		**3.0000e-004**	**3.0000e-004**	**0.0000**	**19.5324**	**19.5324**	**1.5100e-003**	**0.0000**	**19.5702**

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	3.8200e-003	1.7600e-003	0.0227	3.0000e-005	2.3200e-003	3.0000e-005	2.3600e-003	6.2000e-004	3.0000e-005	6.5000e-004	0.0000	2.6266	2.6266	1.2000e-004	0.0000	2.6297
Total	**3.8200e-003**	**1.7600e-003**	**0.0227**	**3.0000e-005**	**2.3200e-003**	**3.0000e-005**	**2.3600e-003**	**6.2000e-004**	**3.0000e-005**	**6.5000e-004**	**0.0000**	**2.6266**	**2.6266**	**1.2000e-004**	**0.0000**	**2.6297**

3.8 trenching - 2019

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	0.0120	0.1224	0.1358	2.0000e-004		6.9600e-003	6.9600e-003		6.4000e-003	6.4000e-003	0.0000	18.1318	18.1318	5.7400e-003	0.0000	18.2753
Total	**0.0120**	**0.1224**	**0.1358**	**2.0000e-004**		**6.9600e-003**	**6.9600e-003**		**6.4000e-003**	**6.4000e-003**	**0.0000**	**18.1318**	**18.1318**	**5.7400e-003**	**0.0000**	**18.2753**

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	2.2000e-004	1.0000e-004	1.3200e-003	0.0000	1.2000e-004	0.0000	1.2000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1403	0.1403	1.0000e-005	0.0000	0.1405
Total	**2.2000e-004**	**1.0000e-004**	**1.3200e-003**	**0.0000**	**1.2000e-004**	**0.0000**	**1.2000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1403**	**0.1403**	**1.0000e-005**	**0.0000**	**0.1405**

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	8.4600e-003	0.1812	0.1528	2.0000e-004		9.4000e-004	9.4000e-004		9.4000e-004	9.4000e-004	0.0000	18.1318	18.1318	5.7400e-003	0.0000	18.2752
Total	**8.4600e-003**	**0.1812**	**0.1528**	**2.0000e-004**		**9.4000e-004**	**9.4000e-004**		**9.4000e-004**	**9.4000e-004**	**0.0000**	**18.1318**	**18.1318**	**5.7400e-003**	**0.0000**	**18.2752**

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	2.2000e-004	1.0000e-004	1.3200e-003	0.0000	1.2000e-004	0.0000	1.2000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.1403	0.1403	1.0000e-005	0.0000	0.1405
Total	**2.2000e-004**	**1.0000e-004**	**1.3200e-003**	**0.0000**	**1.2000e-004**	**0.0000**	**1.2000e-004**	**3.0000e-005**	**0.0000**	**3.0000e-005**	**0.0000**	**0.1403**	**0.1403**	**1.0000e-005**	**0.0000**	**0.1405**

Attachment 4: Existing TAC Source Health Risk Assessment Information

I-580 Emissions and Health Risk Impacts

Lassen Road, Livermore CA
I-580
DPM Modeling - Roadway Links, Traffic Volumes, and DPM Emissions
Year = 2021

Road Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	Diesel ADT	Average Speed (mph)
EB-I580	Eastbound I-580	E	6	951	92	27.9	3.4	10,316	variable
WB-I580	Westbound I-580	W	5	940	80	24.3	3.4	10,316	variable

2021 Hourly Diesel Traffic Volumes Per Direction and DPM Emissions - EB-I580

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	3.45%	356	0.0121	9	6.28%	648	0.0123	17	5.67%	585	0.0130
2	1.75%	181	0.0122	10	6.81%	703	0.0120	18	3.02%	311	0.0129
3	1.93%	199	0.0122	11	6.05%	624	0.0121	19	2.84%	293	0.0125
4	3.93%	405	0.0120	12	7.13%	735	0.0122	20	1.00%	103	0.0121
5	2.15%	222	0.0121	13	6.62%	682	0.0122	21	2.86%	295	0.0121
6	3.82%	394	0.0120	14	6.59%	680	0.0122	22	3.82%	394	0.0120
7	6.24%	644	0.0120	15	5.71%	589	0.0123	23	2.03%	209	0.0121
8	5.35%	552	0.0123	16	3.99%	412	0.0124	24	0.96%	99	0.0121
								Total		10,316	

2021 Hourly Diesel Traffic Volumes Per Direction and DPM Emissions - WB-I580

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	3.45%	356	0.0121	9	6.28%	648	0.0164	17	5.67%	585	0.0123
2	1.75%	181	0.0122	10	6.81%	703	0.0120	18	3.02%	311	0.0125
3	1.93%	199	0.0122	11	6.05%	624	0.0121	19	2.84%	293	0.0125
4	3.93%	405	0.0120	12	7.13%	735	0.0122	20	1.00%	103	0.0121
5	2.15%	222	0.0121	13	6.62%	682	0.0122	21	2.86%	295	0.0121
6	3.82%	394	0.0120	14	6.59%	680	0.0122	22	3.82%	394	0.0120
7	6.24%	644	0.0120	15	5.71%	589	0.0123	23	2.03%	209	0.0121
8	5.35%	552	0.0163	16	3.99%	412	0.0124	24	0.96%	99	0.0121
								Total		10,316	

Lassen Road, Livermore CA
I-580
PM2.5 & TOG Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2021

Group Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	ADT	Average Speed (mph)
EB-I580	Eastbound I-580	E	6	951	92	27.9	1.3	99,225	variable
WB-I580	Westbound I-580	W	5	940	80	24.3	1.3	99,225	variable

2021 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - EB-I580

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.29%	1284	0.0291	9	7.07%	7016	0.0231	17	7.19%	7133	0.0220
2	0.47%	470	0.0318	10	4.60%	4561	0.0259	18	7.83%	7766	0.0208
3	0.44%	437	0.0345	11	4.76%	4723	0.0244	19	5.51%	5471	0.0211
4	0.53%	522	0.0470	12	5.98%	5934	0.0240	20	4.10%	4072	0.0207
5	0.60%	596	0.0323	13	6.17%	6118	0.0231	21	3.25%	3223	0.0227
6	1.13%	1119	0.0334	14	6.06%	6016	0.0233	22	3.35%	3319	0.0236
7	3.99%	3959	0.0253	15	6.93%	6878	0.0223	23	2.43%	2408	0.0224
8	7.61%	7554	0.0217	16	6.90%	6851	0.0214	24	1.81%	1794	0.0213
								Total		99,225	

2021 Hourly Traffic Volumes Per Direction and PM2.5 Emissions - WB-I580

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.29%	1284	0.0291	9	7.07%	7016	0.0244	17	7.19%	7133	0.0221
2	0.47%	470	0.0318	10	4.60%	4561	0.0259	18	7.83%	7766	0.0209
3	0.44%	437	0.0345	11	4.76%	4723	0.0244	19	5.51%	5471	0.0211
4	0.53%	522	0.0470	12	5.98%	5934	0.0240	20	4.10%	4072	0.0207
5	0.60%	596	0.0323	13	6.17%	6118	0.0231	21	3.25%	3223	0.0227
6	1.13%	1119	0.0334	14	6.06%	6016	0.0233	22	3.35%	3319	0.0236
7	3.99%	3959	0.0253	15	6.93%	6878	0.0223	23	2.43%	2408	0.0224
8	7.61%	7554	0.0228	16	6.90%	6851	0.0214	24	1.81%	1794	0.0213
								Total		99,225	

Lassen Road, Livermore CA
I-580
Entrained PM2.5 Road Dust Modeling - Roadway Links, Traffic Volumes, and PM2.5 Emissions
Year = 2021

Group Link	Description	Direction	No. Lanes	Link Length (m)	Link Width (ft)	Link Width (m)	Release Height (m)	ADT	Average Speed (mph)
EB-I580	Eastbound I-580	E	6	951	92	27.9	1.3	99,225	variable
WB-I580	Westbound I-580	W	5	940	80	24.3	1.3	99,225	variable

2021 Hourly Traffic Volumes Per Direction and Road Dust PM2.5 Emissions - EB-I580

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.29%	1284	0.0100	9	7.07%	7016	0.0100	17	7.19%	7133	0.0100
2	0.47%	470	0.0100	10	4.60%	4561	0.0100	18	7.83%	7766	0.0100
3	0.44%	437	0.0100	11	4.76%	4723	0.0100	19	5.51%	5471	0.0100
4	0.53%	522	0.0100	12	5.98%	5934	0.0100	20	4.10%	4072	0.0100
5	0.60%	596	0.0100	13	6.17%	6118	0.0100	21	3.25%	3223	0.0100
6	1.13%	1119	0.0100	14	6.06%	6016	0.0100	22	3.35%	3319	0.0100
7	3.99%	3959	0.0100	15	6.93%	6878	0.0100	23	2.43%	2408	0.0100
8	7.61%	7554	0.0100	16	6.90%	6851	0.0100	24	1.81%	1794	0.0100
								Total		99,225	

2021 Hourly Traffic Volumes Per Direction and Road Dust PM2.5 Emissions - WB-I580

Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile	Hour	% Per Hour	VPH	g/mile
1	1.29%	1284	0.0100	9	7.07%	7016	0.0100	17	7.19%	7133	0.0100
2	0.47%	470	0.0100	10	4.60%	4561	0.0100	18	7.83%	7766	0.0100
3	0.44%	437	0.0100	11	4.76%	4723	0.0100	19	5.51%	5471	0.0100
4	0.53%	522	0.0100	12	5.98%	5934	0.0100	20	4.10%	4072	0.0100
5	0.60%	596	0.0100	13	6.17%	6118	0.0100	21	3.25%	3223	0.0100
6	1.13%	1119	0.0100	14	6.06%	6016	0.0100	22	3.35%	3319	0.0100
7	3.99%	3959	0.0100	15	6.93%	6878	0.0100	23	2.43%	2408	0.0100
8	7.61%	7554	0.0100	16	6.90%	6851	0.0100	24	1.81%	1794	0.0100
								Total		99,225	

Lassen Road, Livermore CA
I-580 Traffic Data and PM2.5 & TOG Emission Factors - 65 mph

Analysis Year = ***2021***

Vehicle Type	2016 Caltrans Number Vehicles (veh/day)	2021 Number Vehicles (veh/day)	2021 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	116,273	122,087	1.14%	1,397	65	0.0138	0.0193	0.0016	0.0161	0.044
LDT	49,669	52,152	0.17%	89	65	0.0150	0.0193	0.0015	0.0216	0.085
MDT	4,220	4,431	10.37%	460	65	0.0137	0.0232	0.0023	0.0437	0.175
HDT	18,838	19,780	94.48%	18,687	65	0.0120	0.0568	0.0116	0.1355	0.097
Total	189,000	198,450	-	20,633	65	-	-		-	-
Mix Avg Emission Factor						**0.01218**	**0.02313**	**0.00257**	**0.01907**	**0.05896**
Increase From 2016		1.05								
Vehicles/Direction		99,225		10,316						
Avg Vehicles/Hour/Direction		**4,134**		**430**						

Traffic Data Year = ***2016***

Caltrans 2016 Truck AADTs %		Total	Truck by Axle			
	Total	Truck	2	3	4	5
I-580 A First St, Livermore	189,000	23,058	4,220	715	484	17,639
			18.30%	3.10%	2.10%	76.50%
Percent of Total Vehicles		12.20%	2.23%	0.38%	0.26%	9.33%

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

Lassen Road, Livermore CA
I-580 Traffic Data and PM2.5 & TOG Emission Factors - 40 mph

Analysis Year = ***2021***

Vehicle Type	2016 Caltrans Number Vehicles (veh/day)	2021 Number Vehicles (veh/day)	2021 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	116,273	122,087	1.14%	1,397	40	0.0120	0.0192	0.0014	0.0149	0.044
LDT	49,669	52,152	0.17%	89	40	0.0131	0.0191	0.0014	0.0202	0.085
MDT	4,220	4,431	10.37%	460	40	0.0143	0.0231	0.0022	0.0402	0.175
HDT	18,838	19,780	94.48%	18,687	40	0.0131	0.0575	0.0123	0.1130	0.097
Total	189,000	198,450	-	20,633	40	-	-		-	-
Mix Avg Emission Factor						**0.01303**	**0.02308**	**0.00253**	**0.01765**	**0.05896**
Increase From 2016		1.05								
Vehicles/Direction		99,225		10,316						
Avg Vehicles/Hour/Direction		**4,134**		**430**						

Traffic Data Year = ***2016***

Caltrans 2016 Truck AADTs %		Total*	Truck by Axle			
	Total	Truck	2	3	4	5
I-580 A First St, Livermore	189,000	23,058	4,220	715	484	17,639
0			18.30%	3.10%	2.10%	76.50%
Percent of Total Vehicles		12.20%	2.23%	0.38%	0.26%	9.33%

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

Lassen Road, Livermore CA
I-580 Traffic Data and PM2.5 & TOG Emission Factors - 25 mph

Analysis Year = ***2021***

Vehicle Type	2016 Caltrans Number Vehicles (veh/day)	2021 Number Vehicles (veh/day)	2021 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	116,273	122,087	1.14%	1,397	25	0.0176	0.0203	0.0025	0.0265	0.044
LDT	49,669	52,152	0.17%	89	25	0.0192	0.0202	0.0025	0.0357	0.085
MDT	4,220	4,431	10.37%	460	25	0.0254	0.0277	0.0068	0.0738	0.175
HDT	18,838	19,780	94.48%	18,687	25	0.0159	0.0601	0.0148	0.1865	0.097
Total	189,000	198,450	-	20,633	25	-	-	-	-	-
Mix Avg Emission Factor						**0.01628**	**0.02440**	**0.00384**	**0.03121**	**0.05896**
Increase From 2016		1.05								
Vehicles/Direction		99,225		10,316						
Avg Vehicles/Hour/Direction		**4,134**		**430**						

Traffic Data Year = ***2016***

Caltrans 2016 Truck AADTs %	Total	Total Truck	Truck by Axle: 2	3	4	5
I-580 A First St, Livermore	189,000	23,058	4,220	715	484	17,639
			18.30%	3.10%	2.10%	76.50%
Percent of Total Vehicles		12.20%	2.23%	0.38%	0.26%	9.33%

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

Lassen Road, Livermore CA
I-580 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	0.02	2.4	Alameda	61	0.00998

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

Lassen Road, Livermore, CA - I-580 - TACs & PM2.5
AERMOD Risk Modeling Parameters and Maximum Concentrations
On-Site Residential Receptors (1.5 meter receptor heights)

Emissions Year	2022
Receptor Information	
Number of Receptors	286
Receptor Height =	1.5 meters above ground level
Receptor distances =	7 meter spacing in residential areas
Meteorological Conditions	
BAAQMD Moffett Field Met Data	2009-2013
Land Use Classification	urban
Wind speed =	variable
Wind direction =	variable

MEI Maximum Concentrations

Meteorological Data Years	Concentration (µg/m^3)		
	DPM	Exhaust TOG	Evaporative TOG
2009-2013	0.02449	0.4129	1.2243

Meteorological Data Years	PM2.5 Concentrations (µg/m^3)		
	Total PM2.5	Road Dust PM2.5	Vehicle PM2.5
2009-2013	0.7009	0.2105	0.49041

Lassen Road, Livermore, CA - I-580 Maximum Cancer Risks
On-Site Residential Receptors (1.5 meter receptor heights)
30-Year Residential Exposure

Cancer Risk Calculation Method

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

Where: CPF = Cancer potency factor $(mg/kg\text{-}day)^{-1}$
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 -->	3rd Trimester	0 - <2	2 - <16	16 - 30
Parameter				
ASF	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
ED =	0.25	2	14	14
AT =	70	70	70	70
FAH =	1.00	1.00	1.00	0.73

* 95th percentile breathing rates

Road Traffic Cancer Risk by Year - Maximum Impact Receptor Location

				Maximum - Exposure Information				Cancer Risk (per million)			
					Annual TAC Conc (ug/m3)						
Exposure Year	Year	Exposure Duration (years)	Age	Age Sensitivity Factor	DPM	Exhaust TOG	Evaporative TOG	DPM	Exhaust TOG	Evaporative TOG	Total
0	2021	0.25	-0.25 - 0*	10	0.0245	0.4129	1.2243	0.333	0.032	0.006	0.37
1	2021	1	1	10	0.0245	0.4129	1.2243	4.02	0.387	0.068	4.48
2	2022	1	2	10	0.0245	0.4129	1.2243	4.02	0.387	0.068	4.48
3	2023	1	3	3	0.0245	0.4129	1.2243	0.63	0.061	0.011	0.70
4	2024	1	4	3	0.0245	0.4129	1.2243	0.63	0.061	0.011	0.70
5	2025	1	5	3	0.0245	0.4129	1.2243	0.63	0.061	0.011	0.70
6	2026	1	6	3	0.0245	0.4129	1.2243	0.63	0.061	0.011	0.70
7	2027	1	7	3	0.0245	0.4129	1.2243	0.63	0.061	0.011	0.70
8	2028	1	8	3	0.0245	0.4129	1.2243	0.63	0.061	0.011	0.70
9	2029	1	9	3	0.0245	0.4129	1.2243	0.63	0.061	0.011	0.70
10	2030	1	10	3	0.0245	0.4129	1.2243	0.63	0.061	0.011	0.70
11	2031	1	11	3	0.0245	0.4129	1.2243	0.63	0.061	0.011	0.70
12	2032	1	12	3	0.0245	0.4129	1.2243	0.63	0.061	0.011	0.70
13	2033	1	13	3	0.0245	0.4129	1.2243	0.63	0.061	0.011	0.70
14	2034	1	14	3	0.0245	0.4129	1.2243	0.63	0.061	0.011	0.70
15	2035	1	15	3	0.0245	0.4129	1.2243	0.63	0.061	0.011	0.70
16	2036	1	16	3	0.0245	0.4129	1.2243	0.63	0.061	0.011	0.70
17	2037	1	17	1	0.0245	0.4129	1.2243	0.07	0.007	0.001	0.078
18	2038	1	18	1	0.0245	0.4129	1.2243	0.07	0.007	0.001	0.078
19	2039	1	19	1	0.0245	0.4129	1.2243	0.07	0.007	0.001	0.078
20	2040	1	20	1	0.0245	0.4129	1.2243	0.07	0.007	0.001	0.078
21	2041	1	21	1	0.0245	0.4129	1.2243	0.07	0.007	0.001	0.078
22	2042	1	22	1	0.0245	0.4129	1.2243	0.07	0.007	0.001	0.078
23	2043	1	23	1	0.0245	0.4129	1.2243	0.07	0.007	0.001	0.078
24	2044	1	24	1	0.0245	0.4129	1.2243	0.07	0.007	0.001	0.078
25	2045	1	25	1	0.0245	0.4129	1.2243	0.07	0.007	0.001	0.078
26	2046	1	26	1	0.0245	0.4129	1.2243	0.07	0.007	0.001	0.078
27	2047	1	27	1	0.0245	0.4129	1.2243	0.07	0.007	0.001	0.078
28	2048	1	28	1	0.0245	0.4129	1.2243	0.07	0.007	0.001	0.078
29	2049	1	29	1	0.0245	0.4129	1.2243	0.07	0.007	0.001	0.078
30	2050	1	30	1	0.0245	0.4129	1.2243	0.07	0.007	0.001	0.078
Total Increased Cancer Risk			**Total**					18.23	1.755	0.307	**20.3**

* Third trimester of pregnancy

Bay Area Air Quality Management District

Risk & Hazard Stationary Source Inquiry Form

This form is required when users request stationary source data from BAAQMD. This form is to be used with the BAAQMD's Google Earth stationary source screening tables.

For guidance on conducting a risk & hazard screening, including for roadways & freeways, refer to the District's Risk & Hazard Analysis flow chart.

Table A: Requestor Contact Information	
Contact Name:	James Reyff
Affiliation:	Illingworth & Rodkin, Inc.
Phone:	707-794-0400
Email:	
Date of Request	
Project Name:	Lassen Road Residential
Address:	
City:	Livermore
County:	Alameda
Type (residential, commercial, mixed use, industrial, etc.):	Residential
Project size (# of units, or building square feet):	196 dwelling units
Comments:	
Used 2012 data and applied 2015 OEHHA and distance multipliers	

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

Complete all the contact and project information re

Download and install the free program Google Eart
source application files from the District's website,

The small points on the map represent stationary s
gas stations, dry cleaners, boilers, printers, auto sp
preliminary estimated cancer risk, hazard index, an

Find the project site in Google Earth by inputting th

Using the Google Earth ruler function, measure the
within 1,000 feet of the project's fenceline. Verify t
the Google Earth address search box to confirm tha
information in Step 9).

If the stationary source is within 1,000 feet of the p
PM2.5 concentration, and instead says to "Contact

Note that a small percentage of the stationary sour
noted by an asterisk next to the Plant Name (Map B
further.

Email this completed form to District staff (Step 9).

information or data are not available, source emiss

Note that a public records request received for the

Submit forms, maps, and questions to Alison Kirk

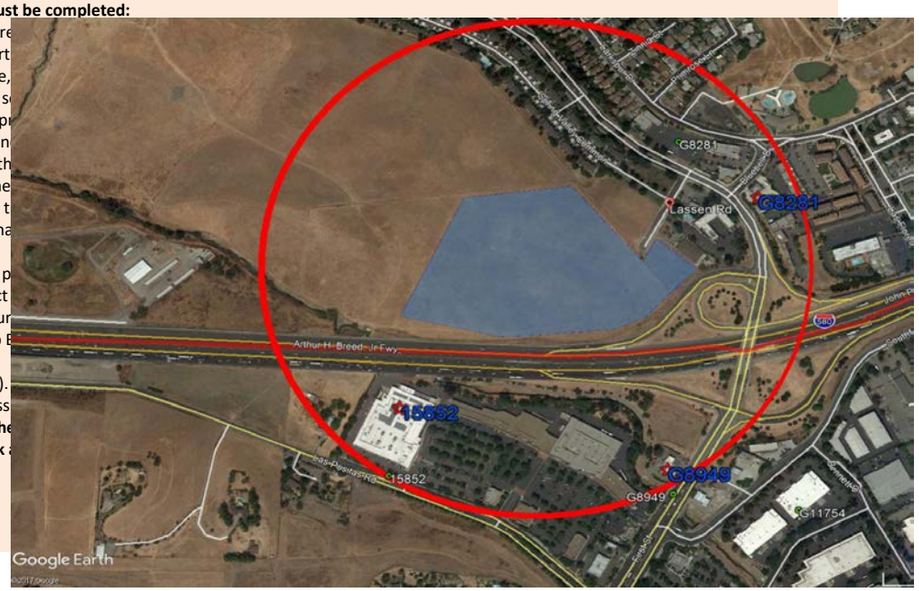


Table B: Stationary Sources within 1,000 feet of Receptor that say "Contact District Staff"

Table B Section 1: Requestor fills out these columns based on Google Earth data				Table B Section 2: BAAQMD returns form with additional information in these columns as needed						
Distance from Receptor (feet)	**Plant # or Gas Dispensary #**	**Facility Name**	**Street Address**	**2012 Screening Level Cancer Risk (1)**	**2012 Screening Level Hazard Index (1)**	**2012 Screening Level PM2.5 (1)**	**2015 Screening Level Cancer Risk (w/OEHHA)**	**Multiplier**	**Distance Adjusted Cancer Risk**	**Distance Adjusted PM2.5 Level**
900	G8281	Springtown Gasoline	909 Blue Bell Drive	14.391	0.022	0.000	19.78	0.02	0.4	0.00
1000	G8949	Unocal #6034	4700 1st Street	10.026	0.015	0.000	13.78	0.04	0.6	0.00
1,100	15852	Target Corporation - T0828 (Generator)	4300 Las Positas Road	0.03	0.000	0.001	0.04	0.02	0.0	0.00

Footnotes:

1. These Cancer Risk, Hazard Index, and PM2.5 columns represent the rows in the Google Earth Plant Information Table that say "Contact District Staff" (Map A above). BAAQMD will return this form to you with this screening level information entered in these columns.

Date last updated:
3/12/12

Bay Area Air Quality Management District

Roadway Screening Analysis Calculator

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

INSTRUCTIONS:

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

• County: Select the County where the project is located. The calculator is only applicable for projects within the nine Bay Area counties.

• Roadway Direction: Select the orientation that best matches the roadway. If the roadway orientation is neither clearly north-south nor east-west, use the highest values predicted from either orientation.

• Side of the Roadway: Identify on which side of the roadway the project is located.

• Distance from Roadway: Enter the distance in feet from the nearest edge of the roadway to the project site. The calculator estimates values for distances greater than 10 feet and less than 1000 feet. For distances greater than 1000 feet, the user can choose to extrapolate values using a distribution curve or apply 1000 feet values for greater distances.

• Annual Average Daily Traffic (ADT): Enter the annual average daily traffic on the roadway. These data may be collected from the city or the county (if the area is unincorporated).

When the user has completed the data entries, the screening level PM2.5 annual average concentration and the cancer risk results will appear in the Results Box on the right. Please note that the roadway tool is not applicable for California State Highways and the District refers the user to the Highway Screening Analysis Tool at: http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx.

Notes and References listed below the Search Boxes

Search Parameters

County	Alameda
Roadway Direction	North-South
Side of the Roadway	West
Distance from Roadway	600 feet
Annual Average Daily Traffic (ADT)	32,000

Results

Alameda County

NORTH-SOUTH DIRECTIONAL ROADWAY

PM2.5 annual average

0.040 ($\mu g/m^3$)

Cancer Risk

2.28 (per million)

First Street

Data for Alameda County based on meteorological data collected from Pleasanton in 2005

Adjusted for 2015 OEHHA and EMFAC2014 for 2018

1.56

(per million)

Note that EMFAC2014 predicts DSL PM2.5 aggragate rates in 2018 that are 46% of EMFAC2011 for 2014. TOG gasoline rates are 56% of EMFAC2011 year 2014 rates. This is for light- and medium-duty vehciles traveling at 30 mph for Bay Area

Notes and References:

1. Emissions were developed using EMFAC2011 for fleet mix in 2014 assuming 10,000 AADT and includes impacts from diesel and gasoline vehicle exhaust, brake and tire wear, and resuspended dust.
2. Roadways were modeled using ~~CALINE4~~ Cal3qhcr air dispersion model assuming a source length of one kilometer. Meteorological data used to estimate the screening values are noted at the bottom of the "Results" box.
3. Cancer risks were estimated for 70 year lifetime exposure starting in 2014 that includes sensitivity values for early life exposures and OEHHA toxicity values adopted in 2013.