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July 24, 2020

Hayes Shair, AIA, LEED GATITLE
Envisuality Group, Inc.
(415) 855-0384
Via Email: hayes@envisualitygroup.com

Subject: Air Quality and Health Risk Assessment for the Construction of Omaha Subdivision, Fremont, CA

Dear Hayes:

Illingworth & Rodkin, Inc. modeled emissions and conducted a health risk assessment for the toxic air contaminates (TACs) that would be generated during the construction of the Omaha Subdivision project. Project construction activity would generate TACs that would affect nearby sensitive receptors (e.g., homes, daycares, and schools). TACs are a broad class of compounds known to cause morbidity or mortality (usually because they cause cancer) and include diesel particulate matter (DPM) and fine particulate matter where particles have a diameter of 2.5 micrometers or less ($PM_{2.5}$). Emissions of these two pollutants during construction were estimated using the California Emissions Estimator Model (CalEEMod) Version 2016.3.2 and the project information you previously provided. The project land use types (Residential Single Family and Asphalt Paving), size (13 dwelling units and 42,900 sf of roadway on 6.84 acres), and anticipated construction schedule (January 2021 through March 2022) were input to CalEEMod and the California Air Resources Board (CARB) EMission FACtors 2017 (EMFAC2017) model was used to predict emissions rates from on-site construction traffic, which includes worker travel, vendor trucks and haul trucks. Total emissions were based on all vehicle travel, while the HRA used on-site trip lengths were assumed to be no more than one mile in length. Defaults CalEEMod trip rates were applied to estimate vehicle emissions. Table 1 reports total construction emissions (both on and off site). Construction period emissions are below the significance thresholds recommended by the Bay Area Air Quality Management District (BAAQMD) in their 2017 CEQA Air Quality Guidelines.

Table 1. Construction Period Emissions

Scenario	ROG	NOx	PM_{10} Exhaust	$PM_{2.5}$ Exhaust
Total construction emissions (tons)	0.5 tons	3.0 tons	0.2 tons	0.1 tons
Average daily emissions (pounds)[1]	4 lbs./day	21 lbs./day	1 lb./day	1 lb./day
BAAQMD Thresholds (pounds per day)	*54* lbs./day	*54* lbs./day	*82* lbs./day	*54* lbs./day
Exceed Threshold?	No	No	No	No

Notes: [1]Assumes 295 workdays.

Community risk impacts were addressed by predicting increased cancer risk, the increase in annual $PM_{2.5}$ concentrations and computing the Hazard Index (HI) for non-cancer health risks and comparing them to the BAAQMD single source thresholds. This involved the estimating DPM and $PM_{2.5}$ emissions from the project site, dispersion modeling, and cancer risk computations in accordance with BAAQMD's established methodology for computing community risks impacts.

Emissions estimates were input into the U.S. EPA's AERMOD dispersion model to predict DPM and $PM_{2.5}$ concentrations at sensitive receptors (i.e., residents, school children, older adults) in the vicinity of the project construction area. The AERMOD dispersion model is a BAAQMD-recommended model for use in modeling ambient impacts of these types of emission activities for CEQA projects. Modeling of the project consisted of two area sources to represent the on-site construction emissions, one for exhaust emissions (DPM) and one for fugitive dust emissions ($PM_{2.5}$). An emission release height of 19.7 feet (6 meters) was used for the DPM area source to reflect the elevated source height of equipment exhaust pipes plus an additional distance to account for plume rise of the exhaust gases. For modeling fugitive $PM_{2.5}$ emissions, a near-ground level release height of 6.6 feet (2 meters) was used. Emissions from the construction equipment and on-site vehicle travel were distributed throughout the modeled area. Construction emissions were modeled as occurring daily between 7:00 a.m. to 4:00 p.m. A five-year data set (2013-2017) of hourly meteorological data from the San Jose Airport that was prepared for use with the AERMOD model by BAAQMD was used as it is approximately 8.2 miles south from the project site.

Using the maximum annual modeled DPM concentrations, the maximum increased cancer risks were calculated using BAAQMD recommended methods and exposure parameters. Non-cancer health hazards and maximum $PM_{2.5}$ concentrations were also calculated and identified. Results of this assessment indicated that the construction maximumly exposed individual (MEI) was located at a single-family residence adjacent to the western boundary of the project site, on the east side of Yucatan Drive. Without any emissions control measures (i.e., mitigation measures), the maximum increased cancer risks from construction was 23.6 per million and the maximum $PM_{2.5}$ concentration from construction was 0.29 $\mu g/m^3$. The maximum non-cancer hazards risk index would be less than 0.03. This results in an exceedance of the BAAQMD single-source threshold of greater than 10.0 in one million cancer risk.

However, with the incorporation of BAAQMD basic fugitive dust mitigation measures that are required by the City of Fremont and the use of construction equipment that meet U.S. EPA particulate matter emission standards for Tier 4 engines (alternatively engines that meet Tier 2 or 3 standards and use level 3 diesel particulate filters) , the increased project cancer risk would be reduced by at least 86 percent to 3.3 in a million. This level is below the BAAQMD single-source thresholds for cancer risk. Table 2 summarizes the health risk assessment for project related construction activities affecting the residential MEI.

Table 2. Construction Risk Impacts at the Off-site Residential MEI

Source		Cancer Risk (per million)	Annual $PM_{2.5}$ ($\mu g/m^3$)	Hazard Index
Project Construction	Unmitigated	**23.56 (infant)**	0.29	0.03
	Mitigated*	3.28 (infant)	0.09	<0.01
	BAAQMD Single-Source Threshold	***>10.0***	***>0.3***	***>1.0***
Exceed Threshold?	Unmitigated	***Yes***	*No*	*No*
	Mitigated*	*No*	*No*	*No*

* Mitigation Measures include BAAQMD basic dust control and construction equipment engines with Tier 3 emissions limits and Level 3 Filtration.

***Mitigation Measure AQ-1*: Selection of equipment during construction to minimize emissions. Such equipment selection would include the following:**

The project shall develop a plan demonstrating that the off-road equipment used onsite to construct the project would achieve a fleet-wide average 60-percent reduction in DPM exhaust emissions or greater. One feasible plan to achieve this reduction would include the following:

- All diesel-powered off-road equipment, larger than 25 horsepower, operating on the site for more than two days continuously shall, at a minimum, meet U.S. EPA particulate matter emissions standards for Tier 4 interim engines. Where Tier 4 equipment is not available, exceptions could be made for diesel-powered equipment that is equipped with CARB-certified Level 3 Diesel Particulate Filters or equivalent. Equipment that is electrically powered or uses non-diesel fuels would also meet this requirement.

- Install electric line power during early construction phases to avoid use of diesel generators, compressors, and welders.

Effectiveness of Mitigation Measure AQ-1

CalEEMod was used to compute emissions associated with his mitigation measure assuming that all equipment met U.S. EPA Tier 3 engines standards with level 3 diesel particulate matter filters. The computed maximum increased residential cancer risk from construction would be 3.3 in one million. With the implementation of *Mitigation Measure AQ-1*, risk levels would not exceed the BAAQMD significance thresholds.

* * *

Please feel free to contact us if there are questions or if you require further information.

Sincerely,

James A. Reyff
Senior Consultant, Principal
Illingworth & Rodkin, Inc.
JOB #16-092
Attachment: Modeling and Health Risk Assessment Summary File

Attachment

Attachment 1: 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.[27] 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.[28] This HRA used the 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.[29] 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 is 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 and duration of exposure. 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) or liters per kilogram of body weight per 8-hour period for the case of worker or school child exposures. As recommended by the BAAQMD for residential exposures, 95th percentile breathing rates are used for the third trimester and infant exposures, and 80th percentile breathing rates for child and adult exposures. For children at schools and daycare facilities, BAAQMD recommends using the 95th percentile 8-hour breathing rates. 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). For workers, assumed to be adults,

[27] 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.
[28] CARB, 2015. *Risk Management Guidance for Stationary Sources of Air Toxics*. July 23.
[29] BAAQMD, 2016. *BAAQMD Air Toxics NSR Program Health Risk Assessment (HRA) Guidelines*. December 2016.

a 25-year exposure period is recommended by the BAAQMD. For school children a 9-year exposure period is recommended by the BAAQMD.

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 have a cancer risk of one in a million or greater assuming 100 percent exposure (FAH = 1.0).

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

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)
8HrBR = 8-hour breathing rate (L/kg body weight-8 hours)
A = Inhalation absorption factor
EF = Exposure frequency (days/year)
10^{-6} = Conversion factor

* An 8-hour breathing rate (8HrBR) is used for worker and school child exposures.

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 < 16**	**16 - 30**
DPM Cancer Potency Factor $(mg/kg\text{-}day)^{-1}$		1.10E+00	1.10E+00	1.10E+00	1.10E+00
Daily Breathing Rate (L/kg-day) 80th Percentile Rate		273	758	572	261
Daily Breathing Rate (L/kg-day) 95th Percentile Rate		361	1,090	745	335
8-hour Breathing Rate (L/kg-8 hours) 95th Percentile Rate		-	1,200	520	240
Inhalation Absorption Factor		1	1	1	1
Averaging Time (years)		70	70	70	70
Exposure Duration (years)		0.25	2	14	14*
Exposure Frequency (days/year)		350	350	350	350*
Age Sensitivity Factor		10	10	3	1
Fraction of Time at Home (FAH)		0.85-1.0	0.85-1.0	0.72-1.0	0.73*

Non-Cancer Hazards

Non-cancer health risk is usually determined by comparing the predicted level of exposure to a chemical to the level of exposure that is not expected to cause any adverse effects (reference exposure level), even to the most susceptible people. 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.

Omaha Way Residential Project, Freemont, CA

DPM Emissions and Modeling Emission Rates - Without Design Feature Controls

Construction Year	Activity	DPM (ton/year)	Area Source	DPM Emissions (lb/yr)	DPM Emissions (lb/hr)	DPM Emissions (g/s)	Modeled Area (m^2)	DPM Emission Rate ($g/s/m^2$)
2021-2022	Construction	0.130343134	Const_DPM	260.686	0.079357	0.0099989	27934.2	3.57946E-07

0.130343134 *Construction Hours*

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

DPM Emissions and Modeling Emission Rates - With AQ-2 Design Feature Controls

Construction Year	Activity	DPM (ton/year)	Area Source	DPM Emissions (lb/yr)	DPM Emissions (lb/hr)	DPM Emissions (g/s)	Modeled Area (m^2)	DPM Emission Rate ($g/s/m^2$)
2021-2022	Construction	1.82E-02	Const_DPM	36.3063	0.011052	0.0013926	27934.2	4.98518E-08

0.015492535 *Construction Hours*

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

Omaha Way Residential Project, Freemont, CA

PM2.5 Fugitive Dust Emissions for Modeling - Without Design Feature Controls

Construction Year	Activity	Area Source	PM2.5 Emissions (ton/year)	PM2.5 Emissions (lb/yr)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (g/s)	Modeled Area (m^2)	PM2.5 Emission Rate $g/s/m^2$
2021-2022	Construction	CONST_F25	0.09248394	184.968	0.056307	0.0070947	27934.2	2.5398E-07

0.002059101 *Construction Hours*

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

PM2.5 Fugitive Dust Emissions for Modeling - With AQ-2 Design Feature Controls

Construction Year	Activity	Area Source	PM2.5 Emissions (ton/year)	PM2.5 Emissions (lb/yr)	PM2.5 Emissions (lb/hr)	PM2.5 Emissions (g/s)	Modeled Area (m^2)	PM2.5 Emission Rate $g/s/m^2$
2021-2022	Construction	CONST_F25	0.04198394	83.9679	0.025561	0.0032207	27934.2	1.153E-07

Construction Hours

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

Omaha Way Residential Project, Freemont, CA - Const Impacts Only No Mitigation
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction
Impacts at Off-Site SF-Home - 1.5 meter receptor height

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

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

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

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

Values

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

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

Construction Cancer Risk by Year - Maximum Impact Receptor Location

			Infant/Child - Exposure Information			Infant/Child	Adult - Exposure Information			Adult		Maximum	
			DPM Conc (ug/m3)		Age	Cancer	Modeled DPM Conc (ug/m3)		Age	Cancer			
Exposure Year	**Exposure Duration (years)**	**Age**	**Year**	**Annual**	**Sensitivity Factor**	**Risk (per million)**	**Year**	**Annual**	**Sensitivity Factor**	**Risk (per million)**	**HI**	**Fugitive PM2.5**	**Total PM2.5**
0	0.25	-0.25 - 0*	2021-2022	0.1325	10	1.80							
1	1	0 - 1	2021-2022	0.1325	10	21.76	2021-2022	0.1325	1	0.38	0.027	0.1600	0.292
2	1	1 - 2	2022-2023	0.0000	10	0.00	2022-2023	0.0000	1	0.00	0.000	0.0000	0.0000
3	1	2 - 3	2023-2024	0.0000	3	0.00	2023-2024	0.0000	1	0.00	0.000	0.0000	0.000
4	1	3 - 4	2024-2025	0.0000	3	0.00	2024-2025	0.0000	1	0.00	0.000	0.0000	0.000
5	1	4 - 5	2025	0.0000	3	0.00	2025	0.0000	1	0.00			
6	1	5 - 6	2026	0.0000	3	0.00	2026	0.0000	1	0.00			
7	1	6 - 7	2027	0.0000	3	0.00	2027	0.0000	1	0.00			
8	1	7 - 8	2028	0.0000	3	0.00	2028	0.0000	1	0.00			
9	1	8 - 9	2029	0.0000	3	0.00	2029	0.0000	1	0.00			
10	1	9 - 10	2030	0.0000	3	0.00	2030	0.0000	1	0.00			
11	1	10 - 11	2031	0.0000	3	0.00	2031	0.0000	1	0.00			
12	1	11 - 12	2032	0.0000	3	0.00	2032	0.0000	1	0.00			
13	1	12 - 13	2033	0.0000	3	0.00	2033	0.0000	1	0.00			
14	1	13 - 14	2034	0.0000	3	0.00	2034	0.0000	1	0.00			
15	1	14 - 15	2035	0.0000	3	0.00	2035	0.0000	1	0.00			
16	1	15 - 16	2036	0.0000	3	0.00	2036	0.0000	1	0.00			
17	1	16-17	2037	0.0000	1	0.00	2037	0.0000	1	0.00			
18	1	17-18	2038	0.0000	1	0.00	2038	0.0000	1	0.00			
19	1	18-19	2039	0.0000	1	0.00	2039	0.0000	1	0.00			
20	1	19-20	2040	0.0000	1	0.00	2040	0.0000	1	0.00			
21	1	20-21	2041	0.0000	1	0.00	2041	0.0000	1	0.00			
22	1	21-22	2042	0.0000	1	0.00	2042	0.0000	1	0.00			
23	1	22-23	2043	0.0000	1	0.00	2043	0.0000	1	0.00			
24	1	23-24	2044	0.0000	1	0.00	2044	0.0000	1	0.00			
25	1	24-25	2045	0.0000	1	0.00	2045	0.0000	1	0.00			
26	1	25-26	2046	0.0000	1	0.00	2046	0.0000	1	0.00			
27	1	26-27	2047	0.0000	1	0.00	2047	0.0000	1	0.00			
28	1	27-28	2048	0.0000	1	0.00	2048	0.0000	1	0.00			
29	1	28-29	2049	0.0000	1	0.00	2049	0.0000	1	0.00			
30	1	29-30	2050	0.0000	1	0.00	2050	0.0000	1	0.00			
Total Increased Cancer Risk						**23.56**				**0.38**			

* Third trimester of pregnancy

Omaha Way Residential Project, Freemont, CA - Construction Impacts - With Mitigation
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction
Mitigated Impacts at Off-Site SF-Home - 1.5 meter receptor height

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

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

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

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

Values

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

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

Construction Cancer Risk by Year - Maximum Impact Receptor Location

			Infant/Child - Exposure Information			Infant/Child	Adult - Exposure Information			Adult			
							Modeled						
			DPM Conc (ug/m3)		Age	Cancer	DPM Conc (ug/m3)		Age	Cancer		Maximum	
Exposure Year	**Exposure Duration (years)**	**Age**	**Year**	**Annual**	**Sensitivity Factor**	**Risk (per million)**	**Year**	**Annual**	**Sensitivity Factor**	**Risk (per million)**	**HI**	**Fugitive PM2.5**	**Total PM2.5**
0	0.25	-0.25 - 0*	2021-2022	0.0185	10	0.25							
1	1	0 - 1	2021-2022	0.0185	10	3.03	2021-2022	0.0185	1	0.05	0.004	0.0726	0.091
2	1	1 - 2	2022-2023	0.0000	10	0.00	2022-2023	0.0000	1	0.00	0.000	0.0000	0.0000
3	1	2 - 3	2023-2024	0.0000	3	0.00	2023-2024	0.0000	1	0.00	0.000	0.0000	0.000
4	1	3 - 4	2024-2025	0.0000	3	0.00	2024-2025	0.0000	1	0.00	0.000	0.0000	0.000
5	1	4 - 5	2025	0.0000	3	0.00	2025	0.0000	1	0.00			
6	1	5 - 6	2026	0.0000	3	0.00	2026	0.0000	1	0.00			
7	1	6 - 7	2027	0.0000	3	0.00	2027	0.0000	1	0.00			
8	1	7 - 8	2028	0.0000	3	0.00	2028	0.0000	1	0.00			
9	1	8 - 9	2029	0.0000	3	0.00	2029	0.0000	1	0.00			
10	1	9 - 10	2030	0.0000	3	0.00	2030	0.0000	1	0.00			
11	1	10 - 11	2031	0.0000	3	0.00	2031	0.0000	1	0.00			
12	1	11 - 12	2032	0.0000	3	0.00	2032	0.0000	1	0.00			
13	1	12 - 13	2033	0.0000	3	0.00	2033	0.0000	1	0.00			
14	1	13 - 14	2034	0.0000	3	0.00	2034	0.0000	1	0.00			
15	1	14 - 15	2035	0.0000	3	0.00	2035	0.0000	1	0.00			
16	1	15 - 16	2036	0.0000	3	0.00	2036	0.0000	1	0.00			
17	1	16-17	2037	0.0000	1	0.00	2037	0.0000	1	0.00			
18	1	17-18	2038	0.0000	1	0.00	2038	0.0000	1	0.00			
19	1	18-19	2039	0.0000	1	0.00	2039	0.0000	1	0.00			
20	1	19-20	2040	0.0000	1	0.00	2040	0.0000	1	0.00			
21	1	20-21	2041	0.0000	1	0.00	2041	0.0000	1	0.00			
22	1	21-22	2042	0.0000	1	0.00	2042	0.0000	1	0.00			
23	1	22-23	2043	0.0000	1	0.00	2043	0.0000	1	0.00			
24	1	23-24	2044	0.0000	1	0.00	2044	0.0000	1	0.00			
25	1	24-25	2045	0.0000	1	0.00	2045	0.0000	1	0.00			
26	1	25-26	2046	0.0000	1	0.00	2046	0.0000	1	0.00			
27	1	26-27	2047	0.0000	1	0.00	2047	0.0000	1	0.00			
28	1	27-28	2048	0.0000	1	0.00	2048	0.0000	1	0.00			
29	1	28-29	2049	0.0000	1	0.00	2049	0.0000	1	0.00			
30	1	29-30	2050	0.0000	1	0.00	2050	0.0000	1	0.00			
Total Increased Cancer Risk						**3.28**				**0.05**			
	Total Increased Cancer Risk with 100% Tier3Level3					**3.3**							

* Third trimester of pregnancy

Omaha Residential Project in Freemont

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	42.90	1000sqft	0.00	42,900.00	0
Single Family Housing	13.00	Dwelling Unit	6.84	34,285.00	37

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	63
Climate Zone	5			**Operational Year**	2023
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	210	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - 210 is the reported factor by PG&E for 2017 in 2019

Land Use - Per Construction Data Sheet

Construction Phase - Per Construction Data Sheet

Off-road Equipment - Per Construction Data Sheet

Off-road Equipment - No welders

Off-road Equipment - Per Construction Data Sheet

Off-road Equipment -

Grading - Per Constructin Data Sheet

Trips and VMT - Concrete and Asphalt estimated using plans provided, EMFAC2017 used to estimate emissions

Architectural Coating - No parking lot.

Vehicle Emission Factors - 2021 EMFAC2017

Vehicle Emission Factors -

Vehicle Emission Factors -

Woodstoves - No Wood Hearths

Area Coating - No Parking lot

Energy Use -

Water And Wastewater - Assume WWTP

Construction Off-road Equipment Mitigation - T3L3 Equipment Mitigation, Basic BAAQMD dust control

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Parking	2,574.00	0.00
tblAreaCoating	Area_Parking	2574	0
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	DPF	No Change	Level 3
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	12.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstructionPhase	NumDays	10.00	5.00
tblConstructionPhase	NumDays	20.00	40.00
tblConstructionPhase	NumDays	20.00	10.00
tblConstructionPhase	NumDays	230.00	220.00
tblFireplaces	FireplaceWoodMass	228.80	0.00
tblFireplaces	NumberGas	3.25	8.84
tblFireplaces	NumberWood	5.59	0.00
Fleet mix changed to EMFAC2017			
tblGrading	AcresOfGrading	20.00	6.84
tblGrading	MaterialExported	0.00	44,200.00

tblLandUse	LandUseSquareFeet	23,400.00	34,285.00
tblLandUse	LotAcreage	0.98	0.00
tblLandUse	LotAcreage	4.22	6.84
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblOffRoadEquipment	UsageHours	8.00	6.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	210
tblTripsAndVMT	HaulingTripLength	20.00	7.30
tblTripsAndVMT	HaulingTripLength	20.00	7.30
tblTripsAndVMT	HaulingTripNumber	5,525.00	0.00
tblTripsAndVMT	VendorTripNumber	8.00	0.00
tblTripsAndVMT	WorkerTripNumber	18.00	0.00
tblTripsAndVMT	WorkerTripNumber	15.00	0.00
tblTripsAndVMT	WorkerTripNumber	23.00	0.00
tblTripsAndVMT	WorkerTripNumber	20.00	0.00
tblTripsAndVMT	WorkerTripNumber	5.00	0.00
tblTripsAndVMT	WorkerTripNumber	5.00	0.00
tblVehicleEF	Emission factors changed to Emfac2017		
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	956.80	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.2269	2.3026	1.9818	3.3200e-003	0.1717	0.1230	0.2947	0.0918	0.1145	0.2063	0.0000	290.4209	290.4209	0.0781	0.0000	292.3727
2022	0.2521	0.1062	0.1100	1.8000e-004	0.0000	5.5900e-003	5.5900e-003	0.0000	5.2300e-003	5.2300e-003	0.0000	15.9677	15.9677	3.9900e-003	0.0000	16.0676
Maximum	**0.2521**	**2.3026**	**1.9818**	**3.3200e-003**	**0.1717**	**0.1230**	**0.2947**	**0.0918**	**0.1145**	**0.2063**	**0.0000**	**290.4209**	**290.4209**	**0.0781**	**0.0000**	**292.3727**

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					
2021	0.0783	1.6958	2.2148	3.3200e-003	0.0773	0.0155	0.0928	0.0413	0.0155	0.0568	0.0000	290.4206	290.4206	0.0781	0.0000	292.3724
2022	0.2456	0.0940	0.1228	1.8000e-004	0.0000	9.0000e-004	9.0000e-004	0.0000	9.0000e-004	9.0000e-004	0.0000	15.9677	15.9677	3.9900e-003	0.0000	16.0676
Maximum	**0.2456**	**1.6958**	**2.2148**	**3.3200e-003**	**0.0773**	**0.0155**	**0.0928**	**0.0413**	**0.0155**	**0.0568**	**0.0000**	**290.4206**	**290.4206**	**0.0781**	**0.0000**	**292.3724**

	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	**32.38**	**25.69**	**-11.75**	**0.00**	**55.00**	**87.23**	**68.79**	**55.00**	**86.28**	**72.71**	**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	**1-4-2021**	**4-3-2021**	0.7957	0.4868
2	**4-4-2021**	**7-3-2021**	0.5694	0.4259

3	**7-4-2021**	**10-3-2021**	0.5757	0.4306
4	**10-4-2021**	**1-3-2022**	0.5736	0.4306
5	**1-4-2022**	**4-3-2022**	0.3415	0.3256
		Highest	0.7957	0.4868

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	0.1639	2.0700e-003	0.0974	1.0000e-005		6.1000e-004	6.1000e-004		6.1000e-004	6.1000e-004	0.0000	1.2620	1.2620	1.7000e-004	2.0000e-005	1.2724
Energy	2.9700e-003	0.0254	0.0108	1.6000e-004		2.0500e-003	2.0500e-003		2.0500e-003	2.0500e-003	0.0000	39.2460	39.2460	1.9300e-003	8.2000e-004	39.5388
Mobile	0.0572	0.1346	0.4199	1.1700e-003	0.1056	1.9700e-003	0.1076	0.0283	1.8700e-003	0.0302	0.0000	115.2844	115.2844	5.4500e-003	0.0000	115.4206
Waste						0.0000	0.0000		0.0000	0.0000	3.1545	0.0000	3.1545	0.1864	0.0000	7.8151
Water						0.0000	0.0000		0.0000	0.0000	0.2997	0.6146	0.9143	1.1200e-003	6.7000e-004	1.1416
Total	**0.2241**	**0.1620**	**0.5280**	**1.3400e-003**	**0.1056**	**4.6300e-003**	**0.1102**	**0.0283**	**4.5300e-003**	**0.0328**	**3.4542**	**156.4070**	**159.8612**	**0.1951**	**1.5100e-003**	**165.1885**

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	0.1639	2.0700e-003	0.0974	1.0000e-005		6.1000e-004	6.1000e-004		6.1000e-004	6.1000e-004	0.0000	1.2620	1.2620	1.7000e-004	2.0000e-005	1.2724
Energy	2.9700e-003	0.0254	0.0108	1.6000e-004		2.0500e-003	2.0500e-003		2.0500e-003	2.0500e-003	0.0000	39.2460	39.2460	1.9300e-003	8.2000e-004	39.5388

Mobile	0.0572	0.1346	0.4199	1.1700e-003	0.1056	1.9700e-003	0.1076	0.0283	1.8700e-003	0.0302	0.0000	115.2844	115.2844	5.4500e-003	0.0000	115.4206
Waste						0.0000	0.0000		0.0000	0.0000	3.1545	0.0000	3.1545	0.1864	0.0000	7.8151
Water						0.0000	0.0000		0.0000	0.0000	0.2997	0.6146	0.9143	1.1200e-003	6.7000e-004	1.1416
Total	**0.2241**	**0.1620**	**0.5280**	**1.3400e-003**	**0.1056**	**4.6300e-003**	**0.1102**	**0.0283**	**4.5300e-003**	**0.0328**	**3.4542**	**156.4070**	**159.8612**	**0.1951**	**1.5100e-003**	**165.1885**

	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**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/4/2021	1/8/2021	5	5	
2	Grading	Grading	1/9/2021	3/5/2021	5	40	
3	Trenching	Trenching	1/9/2021	1/22/2021	5	10	
4	Paving	Paving	3/6/2021	3/19/2021	5	10	
5	Building Construction	Building Construction	3/20/2021	1/21/2022	5	220	
6	Architectural Coating	Architectural Coating	2/26/2022	3/25/2022	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 6.84

Acres of Paving: 0

Residential Indoor: 69,427; Residential Outdoor: 23,142; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37

Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	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	0	8.00	46	0.45
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	2	6.00	132	0.36
Paving	Rollers	2	6.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	0	6.00	78	0.48
Trenching	Excavators	1	8.00	158	0.38
Trenching	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	8	0.00	0.00	0.00	10.80	7.30	7.30	LD_Mix	HDT_Mix	HHDT
Paving	8	0.00	0.00	0.00	10.80	7.30	7.30	LD_Mix	HDT_Mix	HHDT
Architectural Coating	0	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Trenching	2	0.00	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

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2021

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	9.7200e-003	0.1012	0.0529	1.0000e-004		5.1100e-003	5.1100e-003		4.7000e-003	4.7000e-003	0.0000	8.3589	8.3589	2.7000e-003	0.0000	8.4265
Total	**9.7200e-003**	**0.1012**	**0.0529**	**1.0000e-004**	**0.0452**	**5.1100e-003**	**0.0503**	**0.0248**	**4.7000e-003**	**0.0295**	**0.0000**	**8.3589**	**8.3589**	**2.7000e-003**	**0.0000**	**8.4265**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	2.3300e-003	0.0477	0.0574	1.0000e-004		3.5000e-004	3.5000e-004		3.5000e-004	3.5000e-004	0.0000	8.3589	8.3589	2.7000e-003	0.0000	8.4265
Total	**2.3300e-003**	**0.0477**	**0.0574**	**1.0000e-004**	**0.0203**	**3.5000e-004**	**0.0207**	**0.0112**	**3.5000e-004**	**0.0115**	**0.0000**	**8.3589**	**8.3589**	**2.7000e-003**	**0.0000**	**8.4265**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.3 Grading - 2021

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					0.1266	0.0000	0.1266	0.0670	0.0000	0.0670	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0458	0.4947	0.3172	5.9000e-004		0.0232	0.0232		0.0213	0.0213	0.0000	52.1074	52.1074	0.0169	0.0000	52.5287
Total	**0.0458**	**0.4947**	**0.3172**	**5.9000e-004**	**0.1266**	**0.0232**	**0.1498**	**0.0670**	**0.0213**	**0.0883**	**0.0000**	**52.1074**	**52.1074**	**0.0169**	**0.0000**	**52.5287**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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					0.0570	0.0000	0.0570	0.0301	0.0000	0.0301	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Off-Road	0.0145	0.2968	0.3798	5.9000e-004		2.2700e-003	2.2700e-003		2.2700e-003	2.2700e-003	0.0000	52.1073	52.1073	0.0169	0.0000	52.5287
Total	**0.0145**	**0.2968**	**0.3798**	**5.9000e-004**	**0.0570**	**2.2700e-003**	**0.0592**	**0.0301**	**2.2700e-003**	**0.0324**	**0.0000**	**52.1073**	**52.1073**	**0.0169**	**0.0000**	**52.5287**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Trenching - 2021

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	2.0800e-003	0.0203	0.0277	4.0000e-005		1.0800e-003	1.0800e-003		9.9000e-004	9.9000e-004	0.0000	3.6337	3.6337	1.1800e-003	0.0000	3.6631
Total	**2.0800e-003**	**0.0203**	**0.0277**	**4.0000e-005**		**1.0800e-003**	**1.0800e-003**		**9.9000e-004**	**9.9000e-004**	**0.0000**	**3.6337**	**3.6337**	**1.1800e-003**	**0.0000**	**3.6631**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.0200e-003	0.0210	0.0313	4.0000e-005		1.8000e-004	1.8000e-004		1.8000e-004	1.8000e-004	0.0000	3.6337	3.6337	1.1800e-003	0.0000	3.6631
Total	**1.0200e-003**	**0.0210**	**0.0313**	**4.0000e-005**		**1.8000e-004**	**1.8000e-004**		**1.8000e-004**	**1.8000e-004**	**0.0000**	**3.6337**	**3.6337**	**1.1800e-003**	**0.0000**	**3.6631**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 Paving - 2021

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	5.4700e-003	0.0542	0.0613	9.0000e-005		2.8900e-003	2.8900e-003		2.6700e-003	2.6700e-003	0.0000	8.1853	8.1853	2.5700e-003	0.0000	8.2496
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**5.4700e-003**	**0.0542**	**0.0613**	**9.0000e-005**		**2.8900e-003**	**2.8900e-003**		**2.6700e-003**	**2.6700e-003**	**0.0000**	**8.1853**	**8.1853**	**2.5700e-003**	**0.0000**	**8.2496**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	2.1900e-003	0.0454	0.0677	9.0000e-005		3.9000e-004	3.9000e-004		3.9000e-004	3.9000e-004	0.0000	8.1853	8.1853	2.5700e-003	0.0000	8.2496
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.1900e-003**	**0.0454**	**0.0677**	**9.0000e-005**		**3.9000e-004**	**3.9000e-004**		**3.9000e-004**	**3.9000e-004**	**0.0000**	**8.1853**	**8.1853**	**2.5700e-003**	**0.0000**	**8.2496**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Building Construction - 2021

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	0.1638	1.6321	1.5228	2.5000e-003		0.0907	0.0907		0.0848	0.0848	0.0000	218.1356	218.1356	0.0548	0.0000	219.5048
Total	**0.1638**	**1.6321**	**1.5228**	**2.5000e-003**		**0.0907**	**0.0907**		**0.0848**	**0.0848**	**0.0000**	**218.1356**	**218.1356**	**0.0548**	**0.0000**	**219.5048**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	0.0582	1.2849	1.6786	2.5000e-003		0.0123	0.0123		0.0123	0.0123	0.0000	218.1353	218.1353	0.0548	0.0000	219.5046
Total	**0.0582**	**1.2849**	**1.6786**	**2.5000e-003**		**0.0123**	**0.0123**		**0.0123**	**0.0123**	**0.0000**	**218.1353**	**218.1353**	**0.0548**	**0.0000**	**219.5046**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.6 Building Construction - 2022

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	0.0107	0.1062	0.1100	1.8000e-004		5.5900e-003	5.5900e-003		5.2300e-003	5.2300e-003	0.0000	15.9677	15.9677	3.9900e-003	0.0000	16.0676
Total	**0.0107**	**0.1062**	**0.1100**	**1.8000e-004**		**5.5900e-003**	**5.5900e-003**		**5.2300e-003**	**5.2300e-003**	**0.0000**	**15.9677**	**15.9677**	**3.9900e-003**	**0.0000**	**16.0676**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	4.2600e-003	0.0940	0.1228	1.8000e-004		9.0000e-004	9.0000e-004		9.0000e-004	9.0000e-004	0.0000	15.9677	15.9677	3.9900e-003	0.0000	16.0676
Total	**4.2600e-003**	**0.0940**	**0.1228**	**1.8000e-004**		**9.0000e-004**	**9.0000e-004**		**9.0000e-004**	**9.0000e-004**	**0.0000**	**15.9677**	**15.9677**	**3.9900e-003**	**0.0000**	**16.0676**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.7 Architectural Coating - 2022

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	0.2413					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	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	**0.2413**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	0.2413					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	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	**0.2413**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

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	0.0572	0.1346	0.4199	1.1700e-003	0.1056	1.9700e-003	0.1076	0.0283	1.8700e-003	0.0302	0.0000	115.2844	115.2844	5.4500e-003	0.0000	115.4206
Unmitigated	0.0572	0.1346	0.4199	1.1700e-003	0.1056	1.9700e-003	0.1076	0.0283	1.8700e-003	0.0302	0.0000	115.2844	115.2844	5.4500e-003	0.0000	115.4206

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Asphalt Surfaces	0.00	0.00	0.00		
Single Family Housing	123.76	128.83	112.06	283,649	283,649
Total	123.76	128.83	112.06	283,649	283,649

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
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Single Family Housing	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Asphalt Surfaces	0.557924	0.054319	0.178855	0.106609	0.021376	0.005087	0.022741	0.043294	0.001369	0.001866	0.005581	0.000310	0.000670
Single Family Housing	0.557924	0.054319	0.178855	0.106609	0.021376	0.005087	0.022741	0.043294	0.001369	0.001866	0.005581	0.000310	0.000670

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	9.8848	9.8848	1.3700e-003	2.8000e-004	10.0031
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	9.8848	9.8848	1.3700e-003	2.8000e-004	10.0031
NaturalGas Mitigated	2.9700e-003	0.0254	0.0108	1.6000e-004		2.0500e-003	2.0500e-003		2.0500e-003	2.0500e-003	0.0000	29.3612	29.3612	5.6000e-004	5.4000e-004	29.5357
NaturalGas Unmitigated	2.9700e-003	0.0254	0.0108	1.6000e-004		2.0500e-003	2.0500e-003		2.0500e-003	2.0500e-003	0.0000	29.3612	29.3612	5.6000e-004	5.4000e-004	29.5357

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					
Other Asphalt Surfaces	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

Single Family Housing	550209	2.9700e-003	0.0254	0.0108	1.6000e-004		2.0500e-003	2.0500e-003		2.0500e-003	2.0500e-003	0.0000	29.3612	29.3612	5.6000e-004	5.4000e-004	29.5357
Total		**2.9700e-003**	**0.0254**	**0.0108**	**1.6000e-004**		**2.0500e-003**	**2.0500e-003**		**2.0500e-003**	**2.0500e-003**	**0.0000**	**29.3612**	**29.3612**	**5.6000e-004**	**5.4000e-004**	**29.5357**

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					
Other Asphalt Surfaces	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
Single Family Housing	550209	2.9700e-003	0.0254	0.0108	1.6000e-004		2.0500e-003	2.0500e-003		2.0500e-003	2.0500e-003	0.0000	29.3612	29.3612	5.6000e-004	5.4000e-004	29.5357
Total		**2.9700e-003**	**0.0254**	**0.0108**	**1.6000e-004**		**2.0500e-003**	**2.0500e-003**		**2.0500e-003**	**2.0500e-003**	**0.0000**	**29.3612**	**29.3612**	**5.6000e-004**	**5.4000e-004**	**29.5357**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	103772	9.8848	1.3700e-003	2.8000e-004	10.0031
Total		**9.8848**	**1.3700e-003**	**2.8000e-004**	**10.0031**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	103772	9.8848	1.3700e-003	2.8000e-004	10.0031
Total		**9.8848**	**1.3700e-003**	**2.8000e-004**	**10.0031**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1639	2.0700e-003	0.0974	1.0000e-005		6.1000e-004	6.1000e-004		6.1000e-004	6.1000e-004	0.0000	1.2620	1.2620	1.7000e-004	2.0000e-005	1.2724
Unmitigated	0.1639	2.0700e-003	0.0974	1.0000e-005		6.1000e-004	6.1000e-004		6.1000e-004	6.1000e-004	0.0000	1.2620	1.2620	1.7000e-004	2.0000e-005	1.2724

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	0.0241					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1367					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	1.1000e-004	9.5000e-004	4.1000e-004	1.0000e-005		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	1.1036	1.1036	2.0000e-005	2.0000e-005	1.1101
Landscaping	2.9500e-003	1.1200e-003	0.0969	1.0000e-005		5.4000e-004	5.4000e-004		5.4000e-004	5.4000e-004	0.0000	0.1584	0.1584	1.5000e-004	0.0000	0.1623
Total	**0.1639**	**2.0700e-003**	**0.0974**	**2.0000e-005**		**6.2000e-004**	**6.2000e-004**		**6.2000e-004**	**6.2000e-004**	**0.0000**	**1.2620**	**1.2620**	**1.7000e-004**	**2.0000e-005**	**1.2724**

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	0.0241					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1367					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	1.1000e-004	9.5000e-004	4.1000e-004	1.0000e-005		8.0000e-005	8.0000e-005		8.0000e-005	8.0000e-005	0.0000	1.1036	1.1036	2.0000e-005	2.0000e-005	1.1101
Landscaping	2.9500e-003	1.1200e-003	0.0969	1.0000e-005		5.4000e-004	5.4000e-004		5.4000e-004	5.4000e-004	0.0000	0.1584	0.1584	1.5000e-004	0.0000	0.1623
Total	**0.1639**	**2.0700e-003**	**0.0974**	**2.0000e-005**		**6.2000e-004**	**6.2000e-004**		**6.2000e-004**	**6.2000e-004**	**0.0000**	**1.2620**	**1.2620**	**1.7000e-004**	**2.0000e-005**	**1.2724**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.9143	1.1200e-003	6.7000e-004	1.1416
Unmitigated	0.9143	1.1200e-003	6.7000e-004	1.1416

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	0.847002 / 0.53398	0.9143	1.1200e-003	6.7000e-004	1.1416
Total		**0.9143**	**1.1200e-003**	**6.7000e-004**	**1.1416**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e

Land Use	Mgal	MT/yr			
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	0.847002 / 0.53398	0.9143	1.1200e-003	6.7000e-004	1.1416
Total		**0.9143**	**1.1200e-003**	**6.7000e-004**	**1.1416**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	3.1545	0.1864	0.0000	7.8151
Unmitigated	3.1545	0.1864	0.0000	7.8151

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000

Single Family Housing	15.54	3.1545	0.1864	0.0000	7.8151
Total		**3.1545**	**0.1864**	**0.0000**	**7.8151**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	15.54	3.1545	0.1864	0.0000	7.8151
Total		**3.1545**	**0.1864**	**0.0000**	**7.8151**

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

Air Quality/Noise Construction Information Data Request

Project Name: Omaha

Complete ALL Portions in Yellow

See Equipment Type TAB for type, horsepower and load factor

Project Size 13 Dwelling Units 6.84/ 4.00 construct total project acres disturbed

34285 s.f. residential

s.f. parking lot spaces

Construction Hours am to pm

Pile Driving? Y/N? N

DO NOT MULTIPLY EQUIPMENT HOURS/DAY BY THE QUANTITY OF EQUIPMENT

Quantity	Description	HP	Load Factor	Hours/day	Total Work Days	Avg. Hours per day	Annual Hours	Comments
	Demolition	**Start Date:**	**1/1/2021**	**Total phase:**				**Overall Import/Export Volumes**
		End Date:						
	Concrete/Industrial Saws	81	0.73			#DIV/0!	0	**Demolition Volume**
	Excavators	158	0.38			#DIV/0!	0	Square footage of buildings to be demolished
	Rubber-Tired Dozers	247	0.4			#DIV/0!	0	(*or* total tons to be hauled)
	Tractors/Loaders/Backhoes	97	0.37			#DIV/0!	0	? square feet *or*
								? Hauling volume (tons)
								Any pavement demolished and hauled? ? tons
	Site Preparation	**Start Date:**		**Total phase:**	**5**			
		End Date:						
	Graders	187	0.41			0	0	
3	Rubber Tired Dozers	247	0.4	8	5	8	120	
4	Tractors/Loaders/Backhoes	97	0.37	8	5	8	160	
	Grading / Excavation	**Start Date:**		**Total phase:**	**40**			
		End Date:						**Soil Hauling Volume**
1	Excavators	158	0.38	8	40	8	320	Export volume = 44,200 cubic yards?
1	Graders	187	0.41	8	40	8	320	Import volume = 0 cubic yards?
1	Rubber Tired Dozers	247	0.4	8	40	8	320	
	Scrapers	367	0.48			0	0	
3	Tractors/Loaders/Backhoes	97	0.37	8	40	8	960	
	Other Equipment?							
	Trenching/Foundation	**Start Date:**		**Total phase:**	**10**			
		End Date:						
1	Tractor/Loader/Backhoe	97	0.37	8	10	8	80	
1	Excavators	158	0.38	8	10	8	80	
	Other Equipment?							
	Building - Exterior	**Start Date:**		**Total phase:**	**220**			**Cement Trucks? ? Total Round-Trips**
		End Date:						
1	Cranes	231	0.29	7	15	0.4772727	105	Electric? (Y/N) ___ Otherwise assumed diesel
3	Forklifts	89	0.2	8	220	8	5280	Liquid Propane (LPG)? (Y/N) Otherwise Assumed diesel
1	Generator Sets	84	0.74	8	55	2	440	Or temporary line power? (Y/N) ___
3	Tractors/Loaders/Backhoes	97	0.37	7	110	3.5	2310	
0	Welders	46	0.45	8		0	0	
	Other Equipment?							
Building - Interior/Architectural Coating		**Start Date:**		**Total phase:**	**20**			
		End Date:						
0	Air Compressors	78	0.48	8	20	8	0	Non-diesel compressures
0	Aerial Lift	62	0.31	8	20	8	0	Electric and propane
	Other Equipment?							
	Paving	**Start Date:**		**Total phase:**	**10**			
		Start Date:						
2	Cement and Mortar Mixers	9	0.56	6	10	6	120	
1	Pavers	130	0.42	8	10	8	80	**Asphalt? ___ cubic yards or ____ round trips?**
2	Paving Equipment	132	0.36	6	10	6	120	
2	Rollers	80	0.38	6	10	6	120	
1	Tractors/Loaders/Backhoes	97	0.37	8	10	8	80	
	Other Equipment?							
	Additional Phases	**Start Date:**		**Total phase:**	**0**			
	e.g., Sound Wall Construction	**Start Date:**						
						#DIV/0!	0	
						#DIV/0!	0	
						#DIV/0!	0	
						#DIV/0!	0	
						#DIV/0!	0	

Equipment types listed in "Equipment Types" worksheet tab.

Equipment listed in this sheet is to provide an example of inputs

Complete one sheet for each project component

It is assumed that water trucks would be used during grading

Add or subtract phases and equipment, as appropriate

Modify horsepower or load factor, as appropriate

Summary of Construction Traffic Emissions (EMFAC2017) - on- and near-site travel at 1 mile

CATEGORY	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	NBio- CO2
						Grams					
Hauling	3521.15	70502.54	39190.7335	146.976	1788.32	981.01	2769.3	269.09	594.47	863.55	15766508.51
Vendor	886.30	16404.91	8728.1	35.342	526.24	316.99	843.2	79.18	190.02	269.20	3776452.735
Worker	5311.22	1863.33	20016.5	16.137	1808.95	292.42	2101.4	272.19	127.35	399.54	2087704.219
Total (g)	9718.67	88770.77202	67935.3315	198.454622	4123.509	1590.41657	5713.92557	620.45709	911.8358318	1532.292922	21630665.46
Total (lbs)	21.43	195.71	149.77	0.44	9.09	3.5	12.60	1.37	2.01	3.38	47687.4544
Total (tons)	0.0107	0.098	0.075	0.000	0.005	0.0018	0.0063	0.0007	0.001	0.002	23.84
Total (MT)											21.63

YEAR											
						Tons					
2021	0.0087	0.0794	0.0608	0.0002	0.0037	0.0014	0.0051	0.0006	0.0008	0.0014	17.5567
2022	0.0020	0.0184	0.0141	0.0000	0.0009	0.0003	0.0012	0.0001	0.0002	0.0003	4.0739
2023	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
						0.001422947		0.000555124			
						0.000330187		0.000128813			
						0.001753134		0.000683937			
						0.001753134		0.000683937			

Summary of Construction Traffic Emissions (EMFAC2017) - on- and off-site travel

CATEGORY	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	NBio- CO2
						Grams					
Hauling	18270.58	515735.47	107947.915	1733.771	35766.38	18639.83	54406.2	5381.70	10951.49	16333.19	186631515.2
Vendor	2466.15	55165.45	15558.5	177.786	3841.55	2243.73	6085.3	578.03	1319.91	1897.94	19011675.75
Worker	6109.82	5385.35	64594.7	173.300	19536.66	3041.99	22578.6	2939.65	1268.53	4208.18	18960839.36
Total (g)	26846.55	576286.2717	188101.121	2084.856714	59144.592	23925.54242	83070.1344	8899.38192	13539.92739	22439.30931	224604030.3
Total (lbs)	59.19	1270.49	414.69	4.60	130.39	52.7	183.14	19.62	29.85	49.47	495167.1262
Total (tons)	0.0296	0.635	0.207	0.002	0.065	0.0264	0.0916	0.0098	0.015	0.025	247.58
Total (MT)											224.60

YEAR											
						Tons					
2021	0.0240	0.5156	0.1683	0.0019	0.0529	0.0214	0.0743	0.0080	0.0121	0.0201	182.3019
2022	0.0056	0.1196	0.0391	0.0004	0.0123	0.0050	0.0172	0.0018	0.0028	0.0047	42.3021
2023	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

0.001422947	0.000555124
0.000330187	0.000128813
0.001753134	0.000683937
0.001753134	0.000683937