APPENDIX F

COSTCO AIR QUALITY AND
GREENHOUSE GAS EMISSIONS ASSESSMENT

NEWPARK MALL MIXED USE PROJECT: COSTCO AIR QUALITY EMISSIONS ASSESSMENT

Newark, California

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Introduction

The purpose of this report is to address air quality emissions and community risk impacts associated with the proposed construction of a new approximately 161,800 square foot (sf) Costco Wholesale warehouse store with a 32-pump fuel facility at the NewPark Mall in Newark, California. The project is part of a larger NewPark Mall Mixed Use Project that includes re-positioning and revitalization of the mall and new construction of retail, residential, and potential office and hotel uses to support a thriving neighborhood and retail center. Air quality impacts of this phase are associated with the demolition of the existing uses (i.e., JCPenney store and a Burlington Coat Factory store), construction of new building and infrastructure, and operation of the project. Air pollutant emissions associated with the construction and operation of the project were predicted using appropriate computer models. In addition, the potential construction community risk impact to nearby sensitive receptors and the impact of existing toxic air contaminant (TAC) sources affecting the proposed new sensitive receptors were evaluated. This analysis addresses those issues following the guidance provided by the Bay Area Air Quality Management District (BAAQMD).[1]

Project Description

The new Costco (i.e., the project) involves approximately 7.5 acres of a 10.1-acre portion of the NewPark Mall currently serving as the JCPenney store, Burlington Coat Factory store, and associated parking lot. Both stores would be demolished, the existing parking lot redesigned, and a new approximately 161,800 sf Costco Wholesale warehouse and a 32-pump fuel facility constructed.

Along with the construction of Costco, a new mixed-use apartment building would be constructed on approximately a 3.99-acre portion of the NewPark Mall currently serving as the parking lot and autobody shop for the permanently closed Sears store. Both the existing parking lot and shop would be demolished, and a new six-to-seven story mixed use apartment building would be constructed. There would be 319 apartments, 3,660 sf of retail space, and 12,935 sf of amenities and office space. This building, referred to as Phase A, is located approximately 1,156 feet to the east of the Costco construction site. Construction would begin in 2021 and end in January 2024. An air quality assessment for the Phase A project was completed in a separate report (i.e., *NewPark Mall Mixed Use Project: Phase A Residential Air Quality Emissions Assessment*), however, the combined impacts from the construction and operation of both projects are discussed here, in addition to the impacts attributable to the Costco project.

Setting

The project is in 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 except for ground-level ozone, respirable particulate matter (PM_{10}), and fine particulate matter ($PM_{2.5}$).

[1] Bay Area Air Quality Management District, *CEQA Air Quality Guidelines*, May 2017.

Air Pollutants of Concern

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

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

Toxic Air Contaminants

TACs are a broad class of compounds known to cause morbidity or mortality (usually because they cause cancer) and include, but are not limited to, the criteria air pollutants. TACs are found in ambient air, especially in urban areas, and are caused by industry, agriculture, fuel combustion, and commercial operations (e.g., dry cleaners). TACs are typically found in low concentrations, even near their source (e.g., diesel particulate matter [DPM] near a freeway). Because chronic exposure can result in adverse health effects, TACs are regulated at the regional, State, and federal level.

DPM

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 complicated 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. The most recent Office of Environmental Health Hazard Assessment (OEHHA) risk assessment guidelines were published in February of 2015.[2] See *Attachment 1* for a detailed description of the community risk modeling methodology used in this assessment.

[2] 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.

Non-Diesel Total Organic Gases

Gasoline-powered vehicles, particularly light-duty autos and trucks, emit TACs mostly in the form of total organic gases (TOG). TOG emissions associated with these types of vehicles occur primarily in two forms: running exhaust and evaporative running losses. Additional TOG emissions occur when starting a vehicle, especially cold vehicles. Mobile source TOG includes TACs such as benzene, 1,3-Butadiene, and formaldehyde. Emissions of these TACs are controlled through requirements of motor vehicle exhaust systems and the formulation of gasoline by the U.S. EPA and CARB

Benzene

Benzene is a fundamental component of gasoline and diesel fuel as well as vehicle exhaust. Benzene is emitted through the evaporation of gasoline vapors. Since it is known to cause cancer in humans, benzene was classified as a TAC in 1984 by CARB. Benzene emissions from fuel use are regulated in numerous ways that include standards for the formulation of gasoline, vehicle emission standards, and vapor control systems for storage, fuel dispensing facilities and vehicle on-board fuel systems.

Health Risk Assessment

Emissions of toxic pollutants potentially associated with the Project are estimated using various emissions models. Concentrations of these pollutants in the ambient air are estimated using the U.S. EPA AERMOD dispersion model. The AERMOD dispersion model is a BAAQMD-recommended model for use in modeling analysis of these types of emission sources and activities for CEQA projects.[3] Modeling allows the estimation of both short-term and long-term average concentrations in air for use in a health risk assessment, accounting for site-specific meteorological conditions. Health risks potentially associated with the estimated concentrations of pollutants in the air are characterized in terms of excess lifetime cancer risks (for carcinogenic substances), or comparison with reference exposure levels (RELs) for non-cancer health effects (for non-carcinogenic substances).

Health risks were evaluated for a hypothetical maximum exposed individual (MEI) located at the maximum impact sensitive receptor (sensitive receptors are described below). The hypothetical MEI is an individual assumed to be located where the highest concentrations of air pollutants associated with Project emissions are predicted to occur, based on the air dispersion modeling. Health risks were evaluated at existing locations of nearby sensitive receptors (residences, schools, etc.). Health risks potentially associated with concentrations of carcinogenic air pollutants were calculated as estimated excess lifetime excess cancer risks. The excess lifetime cancer risk for a pollutant is estimated as the product of a 30-year exposure dose over a 70-year lifetime and a cancer potency factor; in other words, it represents the increased cancer risk associated with continuous exposure to concentration of toxic air contaminants in the air over a 30-year period. BAAQMD-recommended exposure parameters were used for the cancer risk and non-cancer health effects calculations, as described in *Attachment 1*.

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

Sensitive Receptors

There are groups of people more affected by air pollution than others. CARB has identified the following persons who are most likely to be affected by air pollution: children under 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. For cancer risk assessments, children are the most sensitive receptors, since they are more susceptible to cancer causing TACs. Residential locations are assumed to include infants and small children. The closest sensitive receptors to the site are children that may be living in the single-family houses across Interstate 880 (I-880) to the north of the project site. The Safari Kid Learning Center is located approximately 755 feet to the northwest of the site, across I-880. No other daycares, schools, senior living, or hospitals are within 1,000 feet of the site. The next closest sensitive receptor is the Newark Memorial High School, located approximately 1,381 feet south of the site.

Regulatory Setting

Federal Regulations

The United States Environmental Protection Agency (EPA) sets nationwide emission standards for mobile sources, which include on-road (highway) motor vehicles such trucks, buses, and automobiles, and non-road (off-road) vehicles and equipment used in construction, agricultural, industrial, and mining activities (such as bulldozers and loaders). The EPA also sets nationwide fuel standards. California also has the ability to set motor vehicle emission standards and standards for fuel used in California, as long as they are the same or more stringent than the Federal standards.

In the past decade, the EPA has established several emission standards for on- and non-road heavy-duty diesel engines used in trucks and other equipment. This was done in part because diesel engines are a significant source of nitrogen oxides, or NO_X, and particulate matter (PM_{10} and $PM_{2.5}$) and because the EPA has identified diesel particulate matter as a probable carcinogen. Implementation of the heavy-duty diesel on-road vehicle standards and the non-road diesel engine standards are estimated to reduce PM and NO_X emissions from diesel engines up to 95 percent in 2030 when the heavy-duty vehicle fleet is completely replaced with newer heavy-duty vehicles that comply with these emission standards.[4]

In concert with the diesel engine emission standards, the EPA has also substantially reduced the amount of sulfur allowed in diesel fuels. The sulfur contained in diesel fuel is a significant contributor to the formation of particulate matter in diesel-fueled engine exhaust. The new standards reduced the amount of sulfur allowed by 97 percent for highway diesel fuel (from 500 parts per million by weight [ppmw] to 15 ppmw), and by 99 percent for off-highway diesel fuel (from about 3,000 ppmw to 15 ppmw). The low sulfur highway fuel (15 ppmw sulfur), also called ultra-low sulfur diesel (ULSD) is currently required for use by all vehicles in the U.S.

[4] USEPA, 2000. *Regulatory Announcement, Heavy-Duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements*. EPA420-F-00-057. December.

All the above Federal diesel engine and diesel fuel requirements have been adopted by California, in some cases with modifications making the requirements more stringent or the implementation dates sooner.

State Regulations

To address the issue of diesel emissions in the state, CARB developed the Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles[5]. In addition to requiring more stringent emission standards for new on-road and off-road mobile sources and stationary diesel-fueled engines to reduce particulate matter emissions by 90 percent, a significant component of the plan involves application of emission control strategies to existing diesel vehicles and equipment. Many of the measures of the Diesel Risk Reduction Plan have been approved and adopted, including the Federal on-road and non-road diesel engine emission standards for new engines, as well as adoption of regulations for low sulfur fuel in California.

CARB has adopted and implemented a number of regulations for stationary and mobile sources to reduce emissions of DPM. Several of these regulatory programs affect medium and heavy-duty diesel trucks that represent the bulk of DPM emissions from California highways. CARB regulations require on-road diesel trucks to be retrofitted with particulate matter controls or replaced to meet 2010 or later engine standards that have much lower DPM and $PM_{2.5}$ emissions. This regulation will substantially reduce these emissions between 2013 and 2023. While new trucks and buses will meet strict federal standards, this measure is intended to accelerate the rate at which the fleet either turns over so there are more cleaner vehicles on the road or is retrofitted to meet similar standards. With this regulation, older, more polluting trucks would be removed from the roads sooner.

CARB has also adopted and implemented regulations to reduce DPM and NO_X emissions from in-use (existing) and new off-road heavy-duty diesel vehicles (e.g., loaders, tractors, bulldozers, backhoes, off-highway trucks, etc.). The regulations apply to diesel-powered off-road vehicles with engines 25 horsepower (hp) or greater. The regulations are intended to reduce particulate matter and NO_X exhaust emissions by requiring owners to turn over their fleet (replace older equipment with newer equipment) or retrofit existing equipment to achieve specified fleet-averaged emission rates. Implementation of this regulation, in conjunction with stringent Federal off-road equipment engine emission limits for new vehicles, will significantly reduce emissions of DPM and NO_X.

Bay Area Air Quality Management District (BAAQMD)

BAAQMD has jurisdiction over an approximately 5,600-square mile area, commonly referred to as the San Francisco Bay Area (Bay Area). The District's boundary encompasses the nine San Francisco Bay Area counties, including Alameda County, Contra Costa County, Marin County,

[5] California Air Resources Board, 2000. *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*. October.

San Francisco County, San Mateo County, Santa Clara County, Napa County, southwestern Solano County, and southern Sonoma County.

BAAQMD is the lead agency in developing plans to address attainment and maintenance of the National Ambient Air Quality Standards and California Ambient Air Quality Standards. The District also has permit authority over most types of stationary equipment utilized for the proposed project. The BAAQMD is responsible for permitting and inspection of stationary sources; enforcement of regulations, including setting fees, levying fines, and enforcement actions; and ensuring that public nuisances are minimized.

BAAQMD regulates the emissions of organic compounds (i.e., ROG) from gasoline dispensing stations through Regulation 8, Rule 7. This rule requires the facility to install enhanced vapor recovery (EVR systems. Since the facility would emit more than 10 pounds of ROG (i.e., volatile organic compounds or VOCs) in a single day, the Best Available Control Technology (BACT) requirement of Regulation 2-2-301 would be triggered. BACT for Gasoline Dispensing Facilities is considered the use of CARB-certified Phase-I and Phase-II vapor recovery equipment. A Health Risk Assessment (HRA) would be required by BAAQMD since the annual benzene emissions, a TAC, exceed the toxic air contaminant risk triggering level specified in Regulation 2-5.

The BAAQMD *California Environmental Quality Act (CEQA) Air Quality Guidelines*[6] were prepared to assist in the evaluation of air quality impacts of projects and plans proposed within the Bay Area. The guidelines provide recommended procedures for evaluating potential air impacts during the environmental review process consistent with CEQA requirements including thresholds of significance, mitigation measures, and background air quality information. They also include assessment methodologies for air toxics, odors, and greenhouse gas emissions. *Attachment 1* includes the detailed community risk modeling methodology associated with BAAQMD guidance.

Newark General Plan

Adopted December 12, 2013, the Newark General Plan[7] is a comprehensive statement of the goals, policies, and actions that will guide future growth and conservation in the City. The air quality section in the Health and Wellness Element includes goals and policies to reduce exposure of the City's sensitive population to air pollution, toxic air contaminants, and GHGs. The following goals and policies are applicable to the proposed project:

Air Quality

Goal HW-1: Air quality that meets state and federal standards and provides improved respiratory health for Newark residents.

Policy HW-1.1: *Air Quality Plans*. Work with appropriate state, federal, and regional agencies to develop and implement programs that help the San Francisco Air Basin meet state and federal air quality standards.

[6] Bay Area Air Quality Management District, 2011. *CEQA Air Quality Guidelines*. May. (Updated May 2017)
[7] City of Newark, *Newark California General Plan,* December 12, 2013. Web: https://www.newark.org/home/showdocument?id=76

Policy HW-1.3: *Reducing Exposure to Air Pollution in New Development*. Use site planning and architectural design to reduce potential exposure of sensitive uses to major air pollution sources, including freeways and industrial activities.

Policy HW-1.4: *Evaluation of Air Quality Impacts.* Evaluate air quality impacts during the local development review process. Development should be located and regulated to minimize significant air quality related health risks.

Action HW-1.A: *Air Quality Plan Implementation.* Work with the BAAQMD to develop and implement plans and programs to reduce diesel pollution, particulate matter, ozone, and toxic air contaminants.

Action HW-1.B: *Air Quality Studies for New Development.* Use the environmental review process to require mitigation of potential air quality impacts generated by new development. Site-specific air quality studies should be required for future development that includes sensitive receptors (such as schools, hospitals, daycare centers, or retirement homes) located within designated air quality buffer areas along Interstate 880 and State Route 84.

Action HW-1.C: *Furnace Replacement and Clean Appliances.* Support programs that help property owners replace residential, commercial, and industrial furnaces and gasoline powered appliances with cleaner fuel, low-emission furnaces, and clean energy appliances.

Action HW-1.D: *Wood Burning Fireplaces.* Ensure compliance with state and federal standards for wood-burning fireplaces and stoves in new or remodeled homes.

Action HW-1.F: *Health Risk Assessments*. Require submittal of a Health Risk Assessment (HRA) for applicants proposing major development or redevelopment within 1,000 feet of the I-880 or SR 84 freeways. For projects where the incremental cancer risk exceeds ten in one million, $PM_{2.5}$ concentrations exceed 0.3 µg/m3, or the appropriate non-cancer hazard index exceeds 1.0, the HRA shall identify mitigation measures capable of reducing potential risks to acceptable levels.

HRAs shall be done in accordance with the latest State OEHHA and BAAQMD guidelines and shall mitigate impacts to levels deemed acceptable by these agencies. The City shall modify its standard conditions of approval to implement this action.

Action HW-1.G: *Construction-Related Pollutants.* Require that construction contractors implement basic control measures consistent with BAAQMD recommendations to limit emissions of construction-related criteria pollutants, including fugitive dust.

Action HW-1.H: *Nuisance Odors.* Evaluate the potential for proposed projects to emit nuisance odors beyond the property line and require that property owners submit odor management plans consistent with BAAQMD regulations.

Action HW-1.I: *Standard Conditions of Approval.* Update the City's Standard Conditions of Approval to require measures which reduce particulate emissions (PM_{10}) from construction and reduce construction-related emissions if project-level environmental review determines that BAAQMD thresholds for criteria pollutants may be exceeded. Mitigation measures for construction impacts could include using construction equipment rated by the EPA as complying with current emission limits, ensuring construction equipment is serviced and maintained to the manufacturer's standards, and limiting nonessential construction equipment idling to no more than five minutes.

NewPark Place Specific Plan

The City of Newark has approved a Specific Plan that will guide the transformation of the NewPark Mall area into a vibrant mixed-use area. The *NewPark Place Specific Plan*[8] is a development implementation tool that translates the City's vision for the redevelopment/revitalization of the Greater NewPark Mall. The planning area is defined by Mowry Avenue on the north, I-880 on the east, the east-west segment of Balentine Drive on the south, and Cedar Boulevard on the west. The new development capacity assumed for the specific plan's boundary is a subset of the total new development capacity assumed in the City's General Plan. Therefore, air quality impacts of the *NewPark Place Specific Plan* were adequately evaluated in the City's General Plan EIR.[9] No additional air quality policies are established by the Specific Plan.

Significance Thresholds

In June 2010, BAAQMD adopted thresholds of significance to assist in the review of projects under CEQA and these significance thresholds were contained in the District's 2011 *CEQA Air Quality Guidelines*. These thresholds were designed to establish the level at which BAAQMD believed air pollution emissions would cause significant environmental impacts under CEQA. The thresholds were challenged through a series of court challenges and were mostly upheld. BAAQMD updated the *CEQA Air Quality Guidelines* in 2017 to include the latest significance thresholds that were used in this analysis are summarized in Table 1. Levels above these thresholds are considered significant.

[8] City of Newark, *NewPark Place Specific Plan,* April 26, 2018. Web: https://www.newark.org/departments/community-development/specific-plans-master-plans
[9] EMC, *NewPark Place Specific Plan Initial Study,* February 16, 2018. Web: https://www.newark.org/home/showpublisheddocument?id=1863

Table 1. BAAQMD 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 1000-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 $\mu g/m^3$	0.8 $\mu g/m^3$	
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)		
*BAAQMD does not have a recommended post-2020 GHG threshold.			

AIR QUALITY IMPACTS

Impact AIR-1: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable State or federal ambient air quality standard?

The Bay Area is considered a non-attainment area for ground-level O_3 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 O_3, $PM_{2.5}$ and PM_{10}, the BAAQMD has established thresholds of significance for these air pollutants and their precursors. These thresholds are for O_3 precursor pollutants (ROG and NOx), PM_{10}, and $PM_{2.5}$ and apply to both construction period and operational period impacts.

Construction period emissions

The California Emissions Estimator Model (CalEEMod) Version 2016.3.2 was used to estimate emissions from on-site construction activity and evaporative emissions. The project land use types

and size, and anticipated construction schedule were input to CalEEMod. The CARB EMission FACtors 2017 (EMFAC2017) model was used to predict emissions from construction traffic, which includes worker travel, vendor trucks and haul trucks.[10] The model output from CalEEMod along with construction inputs are included as *Attachment 2* and EMFAC2017 vehicle emissions modeling outputs are included in *Attachment 3*.

Land Use Inputs

The proposed project land uses were input into CalEEMod as follows:

- 161,800 square feet (sf) entered as "Retail – Discount Club" on 7.5-acres,
- 405 spaces and 266,020 sf entered as "Parking - Parking Lot," and
- 32-pump fuel dispensing facility entered as "Retail – Gasoline/Service Station."

Construction Inputs

CalEEMod computes annual emissions for construction that are based on the project type, size, and acreage. The model provides emission estimates for both on-site and off-site construction activities. On-site activities are primarily made up of construction equipment emissions, while off-site activity includes worker, hauling, and vendor traffic.

The construction build-out scenario, including equipment list and schedule, were based on information provided by the project applicant. The work schedule provided assumed a start date on May 31, 2021 with a completion date in May 2022 (approximately 12 months, or 255 workdays). Within each phase, the quantity of equipment to be used along with the average hours per day and total number of workdays was provided. The first full year of operation was estimated to be 2023. Construction and operations of the Costco Project would overlap with the construction of Phase A.[11]

Construction Truck Traffic Emissions

Construction would produce traffic in the form of worker trips and truck traffic. Traffic-related emissions are based on worker and vendor trip estimates produced by CalEEMod and haul trips that were estimated for demolition, soil material imported and/or exported to the site, and cement and asphalt truck trips. CalEEMod provides daily estimates of worker and vendor trips for each applicable phase. Total trips were computed by multiplying the daily trip rate by the number of days in that phase. Haul trips for soil import/export and demolition were estimated by CalEEMod using the estimates provided by the applicant. The number of concrete and asphalt total round haul trips were provided and converted to total one-way trips, assuming two trips per delivery.

The latest version of the CalEEMod model is based on the older version of the CARB EMFAC2014 motor vehicle emission factor model. This model has been superseded by the EMFAC2017 model. However, CalEEMod has not been updated to include EMFAC2017. Therefore, construction traffic information was combined with EMFAC2017 motor vehicle emissions factors to estimate construction site trip emissions. EMFAC2017 provides aggregate

[10] See CARB's EMFAC2017 Web Database at https://www.arb.ca.gov/emfac/2017/

[11] See *NewPark Mall Mixed Use Project: Phase A Residential Air Quality Emissions Assessment* for more information on emissions from Phase A construction and operation.

emission rates in grams per mile for each vehicle type. The construction traffic vehicle mix for this study was based on CalEEMod default assumptions, where worker trips are assumed to be comprised of light-duty autos (EMFAC category LDA) and light duty trucks (EMFAC category LDT1and LDT2). Vendor trips are comprised of delivery and large trucks (EMFAC category MHDT and HHDT) and haul trips, including cement trucks, are comprised of large trucks (EMFAC category HHDT). Travel distances are based on CalEEMod default lengths, which are 10.8 miles for worker travel, 7.3 miles for vendor trips and 20 miles for hauling (demolition material export and soil import/export). Since CalEEMod does not address cement or asphalt haul trips, these were treated as vendor travel distances (i.e., 7.3 miles). EMFAC2017 emission rates from calendar year 2021 for Alameda County were used. Table 2 provides the traffic inputs that were combined with the EMFAC2017 emission factors to compute vehicle emissions.

Table 2. Construction Traffic Data Used for EMFAC2017 Model Runs

CalEEMod Run/Land Uses and Construction Phase	Trips by Trip Type			Notes
	Total Worker[1]	Total Vendor[1]	Total Haul[2]	
Vehicle mix[1]	70.5% LDA 6.9% LDT1 22.6% LDT2	34.4% MHDT 65.6% HHDT	100% HHDT	
Trip Length (miles)	10.8	7.3	20.0 (Demo/Soil) 7.3 (Cement/Asphalt)	CalEEMod default includes 5 Min Idle.
Demolition	3,795	-	2,996	30,300 tons Debris
Site Preparation/Grading	800	-	1,112	8,900-cy Export
Trenching/ Foundation	600	-	200	100 Concrete Truck Total Round Trips
Building Construction	13,200	5,680	-	
Architectural Coating	2,640	-	-	
Paving	225	-	660	3,300-cy Asphalt, 330 Total Round Trips

Notes:
[1] Based on 2021 EMFAC2017 vehicle fleet mix for Alameda County and CalEEMod default trips.
[2] Demolition and soil hauling trips estimated by CalEEMod based on amount of material to be removed.

Summary of Computed Construction Period Emissions

Annual emissions were predicted using CalEEMod and EMFAC2017. Average daily emissions were computed by dividing the total construction emissions each year by the number of construction days in that year; 154 in 2021 and 100 in 2022 (255 construction workdays total). Table 3 shows daily construction emissions of ROG, NO_X, PM_{10} exhaust, and $PM_{2.5}$ exhaust estimated during construction of Costco. Table 4 shows the combined daily construction emissions of ROG, NO_X, PM_{10} exhaust, and $PM_{2.5}$ exhaust estimated during construction of both Phase A and Costco. As indicated in the tables, predicted construction period emissions would not exceed the BAAQMD significance thresholds.

Table 3. Costco Construction Period Emissions - Unmitigated

Scenario		ROG	NOx	PM_{10} Exhaust	$PM_{2.5}$ Exhaust
Construction Emissions (tons)	2021[1]	0.22 tons	2.43 tons	0.11 tons	0.09 tons
	2022[1]	1.88 tons	0.89 tons	0.04 tons	0.03 tons
	TOTAL	2.10 tons	3.32 tons	0.15 tons	0.12 tons
Daily Emissions (pounds)	2021[1]	2.79 lbs./day	31.55 lbs./day	1.42 lbs./day	1.20 lbs./day
	2022[1]	37.53 lbs./day	17.71 lbs./day	0.82 lbs./day	0.66 lbs./day
	AVERAGE	16.40 lbs./day	26.00 lbs./day	1.18 lbs./day	0.99 lbs./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 154 workdays in 2021 and 100 workdays in 2022.

Table 4. Combined Construction Period Emissions - Unmitigated

Scenario		ROG	NOx	PM_{10} Exhaust	$PM_{2.5}$ Exhaust
Construction Emissions[1] (tons)	2021 - 2022	0.34 tons	3.65 tons	0.17 tons	0.14 tons
	2022 - 2023	2.03 tons	2.32 tons	0.12 tons	0.10 tons
	2023 - 2024	2.89 tons	1.20 tons	0.10 tons	0.09 tons
	TOTAL	5.26 tons	7.17 tons	0.39 tons	0.33 tons
Daily Emissions[1] (pounds)	2021 - 2022	4.47 lbs./day	48.60 lbs./day	2.28 lbs./day	1.95 lbs./day
	2022 - 2023	38.67 lbs./day	28.71 lbs./day	1.43 lbs./day	1.18 lbs./day
	2023 - 2024	20.40 lbs./day	8.48 lbs./day	0.49 lbs./day	0.43 lbs./day
	AVERAGE	21.18 lbs./day	28.60 lbs./day	1.40 lbs./day	1.19 lbs./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] Phase A Construction emission assessed in a separate report. Phase A construction will begin in 2021 and be completed in late 2023/early 2024.

Construction activities, particularly during site preparation and grading, would temporarily generate fugitive dust in the form of PM_{10} and $PM_{2.5}$. Sources of fugitive dust would include disturbed soils at the construction site and trucks carrying uncovered loads of soils. Unless properly controlled, vehicles leaving the site would deposit mud on local streets, which could be an additional source of airborne dust after it dries. The BAAQMD CEQA Air Quality Guidelines consider these impacts to be less-than-significant if best management practices are implemented to reduce these emissions.

Measures to reduce fugitive dust (i.e., $PM_{2.5}$) emissions from construction are required by the City's General Plan EIR to ensure that health impacts to nearby sensitive receptors are minimized. During any construction period ground disturbance, the applicant shall ensure that the project contractor implements basic measures to control dust and exhaust. Implementation of the dust control 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:

1. All exposed, unstabilized surfaces that generate fugitive dust emissions (e.g., unpaved parking areas, material staging areas, soil piles, unstabilized 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.

These basic control measures are consistent with recommendations in the BAAMQD CEQA Guidance for providing "best management practices" to reduce construction emissions and are required for all construction projects per City's General Plan EIR.

<u>Operational Period Emissions</u>

Operational air emissions from the project would be generated primarily from autos driven by future employees and customers. Evaporative pollutants from architectural coatings and maintenance products (classified as consumer products) are typical emissions from these types of uses. CalEEMod was used to estimate emissions from operation of the proposed project assuming full build-out.

Land Uses

The project land uses were input to CalEEMod as described above for the construction period modeling.

Model Year

Emissions associated with vehicle travel depend on the year of analysis because emission control technology requirements are phased-in over time. Therefore, the earlier the year analyzed in the model, the higher the emission rates utilized by CalEEMod. The earliest full year of operation would be 2023 if construction begins in 2021. Emissions associated with build-out later than 2023 would be lower.

Trip Generation Rates

CalEEMod allows the user to enter specific vehicle trip generation rates. Therefore, the project-specific weekday, Saturday, and Sunday trip generation rates for Costco Wholesale warehouse stores with gasoline dispensing facilities (GDFs) were provided by the traffic consultant[12] and input into the model. The default trip lengths and trip types specified by CalEEMod were used with the rates provided.

EMFAC2017 Adjustment

As previously described, the vehicle emission factors and fleet mix used in CalEEMod are based on EMFAC2014, which is an older CARB emission model for on-road and off-road mobile sources. Since the release of CalEEMod Version 2016.3.2, EMFAC2017 became available for use in March 2018 and approved by the EPA in August 2019. It includes the latest data on California's car and truck fleets and travel activity. Additionally, CARB has released EMFAC off-model adjustment factors to account for the Safer Affordable Efficient (SAFE) Vehicle Rule Part One.[13,14] The SAFE vehicle Rule Part One revoked California's authority to set its own GHG emission standards and set zero emission vehicle mandates in California. As a result of this ruling, mobile criteria pollutant emissions would increase for light-duty vehicles. Therefore, the CalEEMod vehicle emission factors and fleet mix were updated with the emission rates and fleet mix from EMFAC2017, which were adjusted with the CARB EMFAC off-model adjustment factors. On-road emission rates for Alameda County, calendar year 2023 were used. More details about the updates in emissions calculation methodologies and data are available in the EMFAC2017 Technical Support documents.[15]

Energy

CalEEMod defaults for energy use were used, which include the 2016 Title 24 Building Standards. GHG emissions modeling includes those indirect emissions from electricity consumption. The

[12] Spreadsheet including daily trip generation rates provided via email by Amy Lopez with Kittelson & Associates, Inc. on February 5, 2021.

[13] California Air Resource Board, 2019. *EMFAC Off-Model Adjustment Factors to Account for the SAFE Vehicle Rule Part One*. November. Web: https://ww3.arb.ca.gov/msei/emfac_off_model_adjustment_factors_final_draft.pdf

[14] California Air Resource Board, 2020. *EMFAC Off-Model Adjustment Factors for Carbon Dioxide (CO_2 Emissions to Accounts for the SAFE Vehicles Rule Part One and the Final SAFE Rule*. June. Web: https://ww3.arb.ca.gov/msei/emfac_off_model_co2_adjustment_factors_06262020-final.pdf?utm_medium=email&utm_source=govdelivery

[15] See CARB 2018: https://ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/road-documentation/msei-modeling-tools-emfac

electricity produced emission rate was modified in CalEEMod. CalEEMod has a default emission factor of 641.3 pounds of CO_2 per megawatt of electricity produced, which is based on Pacific Gas and Electric's (PG&E) 2008 emissions rate. However, PG&E published in 2019 emissions rates for 2010 through 2017, which showed the emission rate for delivered electricity had been reduced to 210 pounds CO_2 per megawatt of electricity delivered in the year 2017.[16] This intensity factor was used in the model and it was assumed that all powered was supplied by PG&E.

Other Inputs

Default model assumptions for emissions associated with solid waste generation and water/wastewater use were applied to the project. Water/wastewater use was changed to 100% aerobic conditions to represent wastewater treatment plant conditions since there are no septic tanks or facultative lagoons at the project site.

Gasoline Dispensing Facility

CalEEMod does not compute evaporative ROG emissions from gasoline dispensing facilities (GDF). Therefore, these emissions were computed outside the model. The transfer and storage of gasoline results in emissions of organic compounds, considered in this assessment as ROG. Emissions of ROG and benzene, which is a TAC, were computed based on projected annual throughput of gasoline (i.e., maximum of 30 million gallons) using emission factors developed by CARB.[17] The emission factors are based on annual gasoline throughput and account for emissions from fuel storage tank loading and pressure driven (breathing) losses, motor vehicle refueling, spillage while refueling, and minor emissions from vapor permeation through gasoline dispensing hoses. The fueling emission factors include the effects of vehicles equipped with onboard refueling vapor recovery (ORVR) systems. ORVR systems were phased in beginning with 1998 model year passenger vehicles, and are now installed on all passenger, light-duty, and medium-duty vehicles manufactured since the 2006 model year. Emissions of benzene were computed assuming that benzene makes up 0.3% of gasoline vapor and 1% of liquid gasoline.[18] These computations are provided in Attachment 2.

Existing Uses

The site is currently part of the NewPark Mall and developed with a JCPenney store and a Burlington Coat Factory store. Therefore, a CalEEMod model run was developed to compute emissions from these stores as if they were operating in 2021 as part of the mall. Existing land uses were input as 167,500 sf of "Retail – Regional Shopping Center." Land use inputs along with the other operational inputs described above for the construction of the Costco were applied to the existing use modeling in the same manner as described. Default CalEEMod daily trip generation rates for "Regional Shopping Center" were used (i.e., 42.7 trips per 1,000 sf).

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[16] PG&E, 2019. *Corporate Responsibility and Sustainability Report*. Web: http://www.pgecorp.com/corp_responsibility/reports/2019/assets/PGE_CRSR_2019.pdf

[17] CARB. 2013. *Revised Emissions Factors for Gasoline Marketing Operations at California Gasoline Dispensing Facilities.* December 23, 2013.

[18] CAPCOA. 1997. *Air Toxics "Hot Spots" Program, Gasoline Service Station Industrywide Risk Assessment Guidelines*, November 1997

Summary of Computed Operational Period Emissions

Annual emissions were predicted using CalEEMod and daily emissions were estimated assuming 360 days of operation. Table 5 shows average daily emissions of ROG, NO_X, total PM_{10}, and total $PM_{2.5}$ during operation of the Costco project. Table 6 shows average daily emissions of ROG, NO_X, total PM_{10}, and total $PM_{2.5}$ during operation of both the Phase A and Costco projects. The operational period emissions would not exceed the BAAQMD significance thresholds for the Costco individually or when considered alongside the Phase A project.[19]

Table 5. Costco Operational Emissions

Scenario	ROG	NOx	PM_{10}	$PM_{2.5}$
2023 Project Operational Emissions (*tons/year*)				
Emissions from CalEEMod (*tons/year*)	4.36 tons	5.06 tons	3.82 tons	1.05 tons
GDF Evaporative Emissions (*tons/year*)	6.58 tons	--	--	--
Total (*tons/year*)	10.94 tons	5.06 tons	3.82 tons	1.05 tons
2023 Existing Site Operational Emissions (*tons/year*)	3.29 tons	4.75 tons	4.56 tons	1.25 tons
Net Annual Emissions (*tons/year*)	7.65 tons	0.31 tons	-0.74 tons	-0.20 tons
BAAQMD Thresholds (tons /year)	*10 tons*	*10 tons*	*15 tons*	*10 tons*
Exceed Threshold?	No	No	No	No
2023 Project Operational Emissions (*lbs./day*)[1]	42.50 lbs.[2]	1.73 lbs.	-4.10 lbs.	-1.11 lbs.
BAAQMD Thresholds (lbs./day)	*54 lbs.*	*54 lbs.*	*82 lbs.*	*54 lbs.*
Exceed Threshold?	No	No	No	No

Notes: [1] Assumes 360-day operation.
[2] This is an extreme computation based on a hypothetical annual throughput of 25,500,000 gallons per year. BAAQMD would identify the throughput limit when issuing an authority to construct permit.

Table 6. Combined Operational Emissions

Scenario	ROG	NOx	PM_{10}	$PM_{2.5}$
Phase A Operational Emissions (*tons/year*)	2.00 tons	1.55 tons	1.54 tons	0.44 tons
Costco Operational Emissions (*tons/year*) [1]	7.65 tons	0.31 tons	-0.74 tons	-0.20 tons
Combined Annual Operational Emissions (*tons/year*)	9.65 tons	1.86 tons	0.80 tons	0.24 tons
BAAQMD Thresholds (tons /year)	*10 tons*	*10 tons*	*15 tons*	*10 tons*
Exceed Threshold?	No	No	No	No
Phase A Operational Emissions (*lbs./day*)	10.9 lbs.	8.5 lbs.	8.4 lbs.	2.4 lbs.
Costco Operational Emissions (*lbs./day*) [1]	42.5 lbs.	1.7 lbs.	-4.1 lbs.	-1.1 lbs.
Combined Annual Operational Emissions (*lbs./day*)	53.4 lbs.	10.2 lbs.	4.3 lbs.	1.3 lbs.
BAAQMD Thresholds (lbs./day)	*54 lbs.*	*54 lbs.*	*82 lbs.*	*54 lbs.*
Exceed Threshold?	No	No	No	No

Notes: [1] Phase A emissions assessed in a separate report.

Impact AIR-2: Expose sensitive receptors to substantial pollutant concentrations?

Project impacts related to increased community risk can occur either by introducing a new source of TACs during construction and operation with the potential to adversely affect existing sensitive

[19] See *NewPark Mall Mixed Use Project: Phase A Residential Air Quality Emissions Assessment* for more information on emissions from Phase A construction and operation.

receptors in the project vicinity or by introducing a new sensitive receptor, such as residents, in proximity to an existing source of TACs.

Community Risk from Project Construction

Project construction activity would generate dust and equipment exhaust on a temporary basis that could affect nearby sensitive receptors. A construction community health risk assessment was prepared to address project construction impacts on the surrounding off-site sensitive receptors.

A community health risk assessment was also prepared to address the impacts of the project's 32-pump GDF on the surrounding off-site sensitive receptors. Operation of the GDF is expected to be a source of TAC emissions. However, operation of the warehouse store is not expected to be a source of TAC or localized air pollutant emissions as it would not generate substantial truck traffic or include additional stationary sources of emissions, such as generators powered by diesel engines. Emissions from automobile traffic generated by the project would be spread out over a broad geographical area and not localized. The project-generated traffic would mostly replace traffic generated by existing uses.

Community risk impacts are addressed by predicting increased lifetime cancer risk, the increase in annual $PM_{2.5}$ concentrations, and computing the Hazard Index (HI) for non-cancer health risks. This involved modeling of TAC and $PM_{2.5}$ emissions, dispersion modeling, and computing cancer risk and HI. The methodology for computing risks impacts is provided in *Attachment 1*.

Project Construction Activity

Construction equipment and associated heavy-duty truck traffic generates diesel exhaust, which is a known TAC. Although it was concluded in the previous sections (see Tables 3 and 4) that construction exhaust air pollutant emissions would not be considered to contribute substantially to existing or projected air quality violations, construction exhaust emissions may still pose health risks for sensitive receptors such as surrounding residents. The primary community risks associated with construction emissions are cancer risk and exposure to $PM_{2.5}$. A health risk assessment of the project construction activities was conducted that evaluated potential health effects to nearby sensitive receptors from construction emissions of DPM and $PM_{2.5}$.[20]

Construction Period Emissions

The CalEEMod model provided total annual PM_{10} exhaust emissions (assumed to be DPM) for the off-road construction equipment and EMFAC2017 was used to estimate exhaust emissions from on-road vehicles. Total DPM emissions from the construction site was estimated to be 0.12 tons (238 pounds). The on-road emissions are a result of haul truck travel during grading activities, worker travel, and vendor deliveries during construction. A trip length of one (1) mile was used to represent vehicle travel while at or near the construction site. It was assumed emissions from on-road vehicles traveling at or near the site would occur at the construction site. Fugitive $PM_{2.5}$ dust emissions were estimated to be 0.05 tons (103 pounds) using the same methods and assumptions used to estimate site DPM emissions.

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

Dispersion Modeling

The U.S. EPA AERMOD dispersion model was used to predict DPM and $PM_{2.5}$ concentrations at sensitive receptors (i.e., residents) 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.[21] The modeling utilized two area sources to represent the on-site construction emissions, one for exhaust emissions and one for fugitive dust emissions. To represent the construction equipment exhaust emissions, an emission release height of 19.7 feet (6 meters) was used. 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 6.6 feet (2 meters) was used. Emissions from the construction equipment and on-site vehicle travel were distributed throughout the modeled area sources. Construction emissions were modeled as occurring daily between 7:00 a.m. to 6:00 p.m.

The modeling used a five-year data set (2013-2017) of hourly meteorological data from Hayward Executive Airport that was prepared for use with the AERMOD model by BAAQMD. Annual DPM and $PM_{2.5}$ concentrations from construction activities during the construction period (May 31, 2021 to June 2022) were calculated using the model. DPM and $PM_{2.5}$ concentrations were calculated at nearby sensitive receptors. A receptor height of 5 feet (1.5 meters) was used to represent the breathing height at nearby single-family homes.

Project Construction Community Risk Impacts

Maximum annual DPM and $PM_{2.5}$ concentrations at nearby sensitive receptors (as shown in Figure 1) were identified using AERMOD and a maximally exposed individual (MEI) identified based on DPM concentrations. Increased cancer risks were calculated using modeled concentrations and BAAQMD recommended methods and exposure parameters described in *Attachment 1*. Non-cancer health hazards and maximum $PM_{2.5}$ concentrations were also calculated and identified. *Attachment 4* includes the emission calculations used for the construction area source modeling and the cancer risk calculations.

Results indicate the unmitigated maximum cancer risk, annual $PM_{2.5}$ concentrations, and non-cancer health hazard index (HI) from construction of the project would not exceed the single-source significance thresholds of 10 in one million cancer risk, 0.3 $\mu g/m^3$ annual $PM_{2.5}$ concentration, and an HI of less than 1.0. The construction MEI was located at a single-family home to the northeast of the project site, opposite I-880 (as shown in Figure 1). Table 7 summarizes the maximum cancer risks, $PM_{2.5}$ concentrations, and HIs for project related construction activities affecting the off-site residential MEI.

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

Table 7. Construction Risk Impacts at the Off-site Residential MEI

Source		Cancer Risk (per million)	Maximum Annual $PM_{2.5}$ ($\mu g/m^3$)	Hazard Index
Costco Construction	Unmitigated	4.52 (infant)	0.07	<0.01
Phase A Construction*	Unmitigated	1.79 (infant)	0.01	<0.01
Combined Construction*	Unmitigated	6.31 (infant)	0.08	<0.01
BAAQMD Single-Source Threshold		***>10.0***	***>0.3***	***>1.0***
Exceed Threshold?	Unmitigated	*No*	*No*	*No*

* Health risks associated with Construction of Phase A assessed in a separate report.

Operational Community Risk Impacts

The proposed Costco would include a 32-pump fuel dispensing facility. It will sale primarily gasoline and will serve primarily light-duty vehicles. The facility will be available to members starting at 5:00 a.m. and will close at 10:00 p.m. daily 360 days per year.

GDFs are a source of TAC emissions because of the traffic traveling to and from the facility, vehicles idling at pump queues, evaporative emissions from vehicle fueling and spillage, tanker trucks delivering fuel to the facility, evaporative emissions from unloading fuel from trucks to storage tanks, and evaporative emissions from the natural off gassing that occurs during fuel storage (i.e., fuel tank breathing). The primary TACs of concern from GDFs are the different toxic components of vehicle exhaust emissions and the toxic components related to the evaporation of gasoline.[22] Health impacts from operation of the GDF are addressed by estimating emissions from each source assuming the facility is operational for 30 years. The year 2022 was selected as the first year of analysis for generating emission rates. Vehicle emission rates are anticipated to decrease in the future due to improvements in exhaust systems and vehicle fleet turnover from older, more polluting vehicles to newer cleaner vehicles.

Traffic-Related Emissions from the GDF

Traffic related emissions are categorized into two types, on-site emissions, and off-site emissions. On-site emissions include travel to and from the fuel pumps, travel to and from the fuel tanks, and vehicle idling while in the fuel pump queue or unloading fuel into the storage tanks. Off-site emissions include the vehicle emissions from travel to and from the site.

For this analysis, off-site vehicle emissions were evaluated as part of the *Combined Impact of All TAC Sources* and presented in Table 8. Roadway emissions estimates in Table 8 include traffic generated by the project and the GDF. On-site vehicle emissions were estimated using daily trip generation estimates provided by the applicant's traffic consultant[23] and emissions factors from CT-EMFAC2017. This method is consistent with the one used to estimate emissions from local roadways as part of the *Combined Impact of All TAC Sources*.

[22] BAAQMD. 2012. Recommended Methods for Screening and Modeling Local Risks and Hazard. May.
[23] Spreadsheet including daily trip generation rates provided via email by Amy Lopez with Kittelson & Associates, Inc. on February 5, 2021.

It is estimated that the Costco GDF will attract 4,203 customers (i.e., vehicles) per day. Each vehicle will produce two trips once on-site: one to the pumps and one leaving the pumps. Based on the trip generation estimates provided by *Kittelson & Associates*, 67 percent (approximately two-thirds) of the customers would access the GDF only, while 33 percent (approximately one-third) will access the GDF either prior to, or after shopping at the warehouse store. Travel paths were estimated for both "gas only" and "shared" onsite trips and emissions estimated for each. Figure 2 shows the travel paths for vehicles accessing the GDF. On-site travel speeds were assumed to be 5 mph.

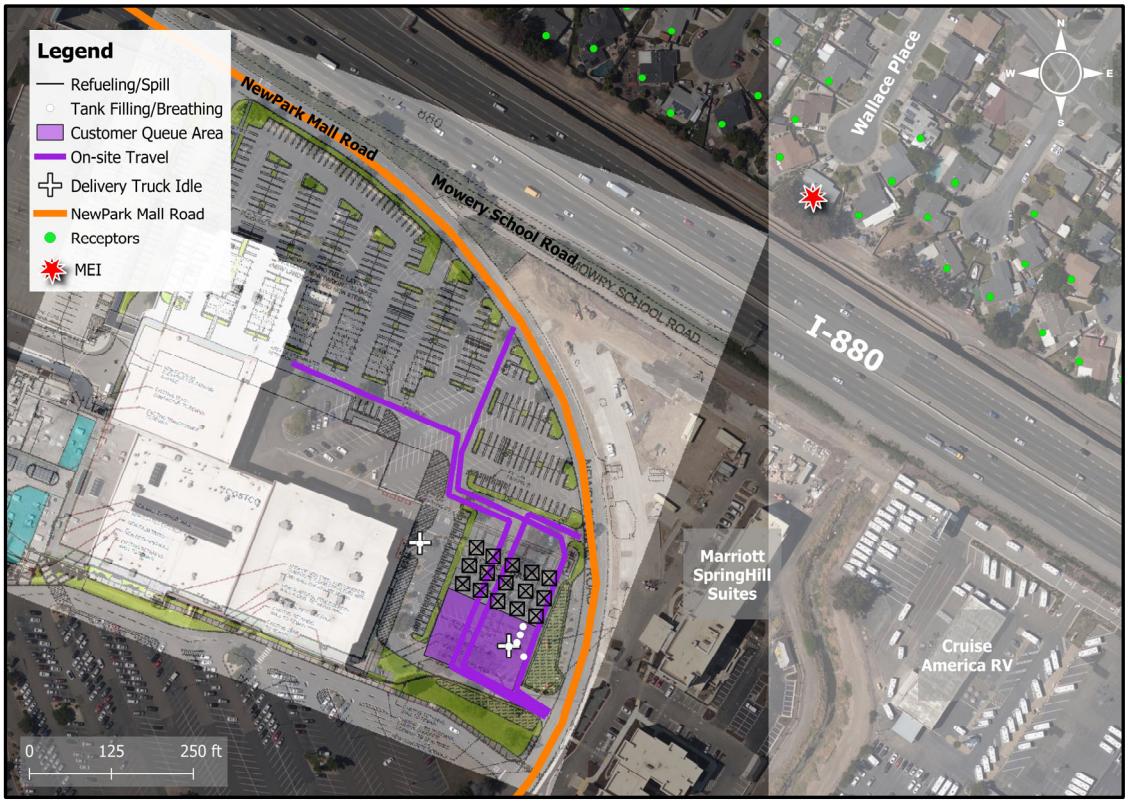
Figure 1. Project Construction Site, Locations of Off-Site Sensitive Receptors, and Locations of TAC Impacts

Likewise, an on-site travel path for fuel delivery trucks was estimated given the site design and location of the underground fuel-storage tanks. *Kittelson & Associates* estimated the number of fuel delivery trucks visiting the site to be three per day. Additionally, *Kittelson & Associates* provided an estimate for the number of warehouse deliveries per day to be ten. As a result, both fuel and warehouse delivery truck emissions were included in the analysis and health risk assessment. On-site travel speeds for delivery trucks were assumed to be 5 mph. All trucks delivering to the site were assumed to be CT-EMFAC, truck type 2 (i.e., Truck 2).

CT-EMFAC2017 was used to develop emission factors for on-site travel. GDF operations used EMFAC2017's mix of vehicles for Alameda County, which includes both light-duty gasoline and light-duty diesel vehicle factions. Inputs to the emissions model include region (i.e., Alameda County), type of road (i.e., major/collector), traffic mix assigned by CT-EMFAC2017 for the county and adjusted for the assumed truck mix (3 percent), year of analysis, and season (i.e., annual). For emissions from on-site truck traffic, CT-EMFAC2017 was used to develop emissions factors for just heavy-duty trucks (i.e., Truck 2) by inputting a 100 percent vehicle fraction. Other

inputs included region (i.e., Alameda County), type of road (i.e., major/collector), year of analysis, and season (i.e., annual).

Figure 2. Modeled On-Site Emission Sources and Receptor Locations



Emissions were estimated for seven specific TACs common to vehicle exhaust: DPM, Benzene, Ethylbenzene, Formaldehyde, Naphthalene, 1,3-Butadiene, and Acetaldehyde using the factors produced by CT-EMFAC2017. On-site emissions include both evaporative emissions and running exhaust emissions. The emissions estimates and methodology for assessing on-site travel for each pollutant analyzed are provided in *Attachment 6*.

$PM_{2.5}$ emissions from on-site travel were also estimated using the methodology described above. Both fugitive and exhaust sources were included in the analysis, based on the travel paths estimated for customers and delivery trucks (both fuel and warehouse deliveries). The methodology for estimating $PM_{2.5}$ emissions from on-site travel is also provided in *Attachment 6*.

Idling Emissions - Customer Vehicles and Delivery Trucks

Emissions from vehicle idling – both GDF customers queuing at the pumps and delivery trucks (both fuel and warehouse deliveries) – were estimated using CT-EMFAC2017. Idle emissions factors were derived by converting 5 mile-per hour emissions rates into hourly emissions. Customer vehicles were conservatively assumed to idle at the pump queue for 10 minutes, given the estimated daily vehicles served by the client. Delivery trucks (both fuel and warehouse deliveries) were assumed to idle for a total of 15 minutes while on-site.

Gasoline Emissions

The transfer and storage of gasoline results in evaporative emissions, which is made up of several pollutants considered TACs, specifically Benzene, Ethylbenzene, Toluene, and Xylenes. Emissions of these pollutants were computed using emission factors developed by CARB[24] and a hypothetical maximum annual throughput of gasoline of 25.5 million gallons. Pollutant emission were estimated for four on-site GDF sources: storage tank loading, pressure driven tank losses (i.e., tank breathing), vehicle refueling, and fuel spillage while refueling. The refueling emission factors account for the effects of vehicles equipped with onboard refueling vapor recovery (ORVR) systems. ORVR systems were phased in beginning with 1998 model year passenger vehicles, and are now installed on all passenger, light-duty, and medium-duty vehicles manufactured since the 2006 model year. Emissions of the TAC pollutants were computed based on the assumptions provided in the Gasoline Service Station Industrywide Risk Assessment Guidelines.[25] A*ttachment 6* includes emissions calculation from GDF fuel transfer activities.

Dispersion Modeling

Concentrations were calculated at residential receptors in the vicinity of the project for each TAC (eight pollutants), DPM, and $PM_{2.5}$. AERMOD was used to calculate the concentrations using the same hourly meteorological data from the Hayward Executive Airport (2013-2017) as previously discussed for the other health risk modeling. Receptor heights of 1.5 meters (4.9 feet) were used to represent the breathing height of people at nearby single-family homes.

On-site delivery truck and customer vehicle travel emissions were modeled as area-line sources (a series of area sources along a line). Truck emission release heights were assumed to be 3.8 meters (12.6 feet), while emissions from customer vehicles were assumed to have a release height of 1.3 meters (4.25 feet). Emissions from idling customer vehicles were modeled using an area source with dimensions corresponding to the pump queueing area. Fuel delivery truck idle emissions were modeled as a point source (truck exhaust stack) in the vicinity of the underground fuel storage tanks. The locations of these emission sources are shown in Figure 3.

TAC emissions from vehicle refueling and fuel spillage were modeled using volume sources as recommended by CAPCOA.[26] Fifteen volume sources were input to represent emissions from the refueling area with side lengths of 6.5 meters (21.3 feet). A release height of 1 meter (3.3 feet) was used for vehicle refueling emissions, while a release height of 0 m (i.e., ground level) was used to represent emissions from spillage. Storage tank loading emissions were modeled as point sources located at each tank fill location (i.e., three point sources). Emissions from breathing losses are discharged from vent pipes located in near the underground storage tank area and were modeled as a single point source. Details on the emission calculations and dispersion modeling information for these sources are provided in *Attachment 6*.

[24] CARB. 2013. *Revised Emissions Factors for Gasoline Marketing Operations at California Gasoline Dispensing Facilities.* December 23, 2013.
[25] CAPCOA. 1997. *Air Toxics "Hot Spots" Program, Gasoline Service Station Industrywide Risk Assessment Guidelines*, November 1997
[26] CAPCOA. 1997. *Air Toxics "Hot Spots" Program, Gasoline Service Station Industrywide Risk Assessment Guidelines*, November 1997

Cancer Risk, Annual $PM_{2.5}$ Concentrations, and Non-Cancer HIs

Using the maximum modeled concentrations, health risks associated with operation of the Costco GDF were computed using the methods used for the previous health risk analyses and as recommended by BAAQMD and OEHHA (see *Attachment 1*). Based on modeled TAC concentrations, cancer risks were calculated for 30-year residential exposures, assuming constant emissions at 2022 levels. Table 8 provides the excess cancer risk, annual $PM_{2.5}$ concentration and acute or chronic non-cancer HIs associated with operation of the GDF. Figure 3 shows the location where the maximum cancer risk is estimated to occur. Note that the maximum impacts from construction and operation occurred at the same receptor.

Total project health risk impacts from construction and operation are also provided in Table 8. The combination of construction of the Costco facility and operation of its GDF would not exceed the single-source thresholds of significance for community risk impacts in terms of excess lifetime cancer risk, annual $PM_{2.5}$ concentrations, or HI.

Table 8. Health Risk Impacts from Costco GDF Operations and Construction to Off-Site MEI

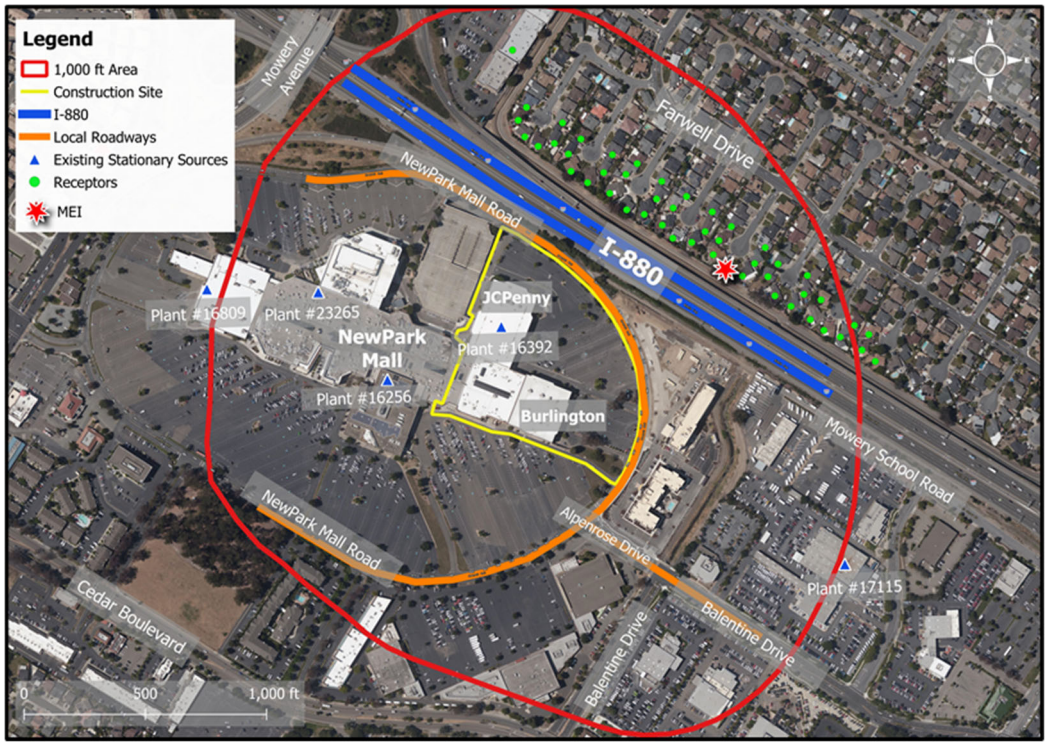
Source	Maximum Cancer Risk (per million)	Maximum Annual $PM_{2.5}$ ($\mu g/m^3$)	Maximum HI (Acute)	Maximum HI (Chronic)
GDF Operations (30 Year -Exposure)	1.0	<0.01	<0.04	<0.01
BAAQMD Single-Source Threshold	***>10.0***	***>0.3***	***>1.0***	***>1.0***
Exceed Threshold?	*No*	*No*	*No*	*No*
Combined Project Impacts				
Costco Construction (Years 0 – 2)	4.52	0.07	NA	0.01
Phase A Construction (Years 0 – 3)*	0.53	0.01	NA	<0.01
GDF Operations (Years 3 – 30)	0.98	<0.01	<0.04	<0.01
Project Total	6.03	0.08	<0.04	<0.03
BAAQMD Single-Source Threshold	***>10.0***	***>0.3***	***>1.0***	***>1.0***
Exceed Threshold?	*No*	*No*	*No*	*No*

* Health risks associated with Construction of Phase A assessed in a separate report.

Combined Impact of All TAC Sources on the Off-Site Construction MEI

Community health risk assessments typically look at all substantial sources of TACs that can affect sensitive receptors that are located within 1,000 feet of the project site (i.e., influence area). These sources include railroads, freeways or highways, busy surface streets, and stationary sources identified by BAAQMD. A review of the project area indicates that traffic on I-880 and Balentine Drive currently has an average daily traffic (ADT) of over 10,000 vehicles. All other roadways within the area are assumed to currently have an ADT that is less than 10,000 vehicles. Three stationary sources were identified within the 1,000-foot influence area using the BAAQMD's stationary source website map. Figure 3 shows the existing TAC sources in the vicinity of the construction site. Community risk impacts from these sources upon the construction MEI are reported in Table 9. Details of the modeling and community risk calculations are included in *Attachment 5.*

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



Freeways – I-880

Both the project site and construction MEI are near I-880 and its interchange with Mowery Avenue. A refined analysis of the impacts of TACs and $PM_{2.5}$ from I-880 on the construction MEI is necessary to evaluate potential cancer risks and $PM_{2.5}$ concentrations associated with the freeway. A review of the AADT information provided by California Department of Transportation (Caltrans)[27] indicates this portion of I-880 had an average annual daily traffic (AADT) volume of between 218,700 and 210,800 vehicles per day based on 2019 measurements. These traffic volume estimates were increased one percent per year to obtain estimates for future years. The truck percentage provided by Caltrans' traffic census program for I-880 were used (average of 6.25 percent trucks), of which 1.8 percent are considered medium duty trucks and 4.5 percent are diesel heavy duty trucks.[28]

Modeling I-880 Emissions

Analysis of I-880 involved developing emissions estimates of DPM, organic TACs (as TOG), and $PM_{2.5}$ emissions for 2022 AADT estimates using the Caltrans version of the CARB's EMFAC2017 emissions model, known as CT-EMFAC2017. CT-EMFAC2017 provides emission factors for mobile source criteria pollutants and TACs, including DPM. Emission processes modeled include running exhaust for DPM, $PM_{2.5}$ and total organic compounds (e.g., TOG), running evaporative losses for TOG, and fugitive road dust for $PM_{2.5}$ that includes tire and brake

[27] Caltrans Traffic Census Program, Traffic Volumes: Annual Average Daily Traffic (AADT), 2019-AADT (XLSX), accessed March 2021. https://dot.ca.gov/programs/traffic-operations/census
[28] Caltrans. 2020. *2019 Annual Average Daily Truck Traffic on the California State Highway System*

wear emissions. In general, vehicle fleet emissions are projected to decrease in the future as reflected in the CT-EMFAC2017 emissions estimates. Inputs to the emissions model include region (i.e., Alameda County), type of road (i.e., freeway), traffic mix assigned by CT-EMFAC2017 for the county, truck traffic percentage (6.25), year of analysis (i.e., 2022), and season (i.e., annual).

Full operation of the project is assumed to occur in 2023 with construction beginning in 2021. To estimate TAC and $PM_{2.5}$ emissions over a 30-year exposure period used for calculating increased cancer risks to the construction MEI from traffic on I-880, the CT-EMFAC2017 model was used to develop vehicle emission factors for 2022 using the mix of vehicles on I-880 in Alameda County. Emissions associated with vehicle travel depend on the year of analysis because emission control technology requirements are phased-in over time. Therefore, the earlier the year analyzed in the model, the higher the emission rates produced by CT-EMFAC2017. Year 2022 emissions were conservatively assumed as being representative of current and future conditions on I-880 over the period that cancer risks are evaluated (30 years). Overall vehicle emissions, in particular diesel truck emissions will decrease in the future. AADT volumes were grown from 2019 levels to 2022 assuming an increase of one percent per year. Hourly traffic distributions specific to this segment of I-880 were obtained from Caltrans Performance Measurement System (PeMS). PeMS data is collected in real-time from nearly 40,000 individual detectors spanning the freeway system across all major metropolitan areas of California.[29] The fraction of traffic volume each hour was calculated and applied to the 2022 AADT estimates to obtain hourly traffic emission rates for I-880.

For all hours of the day, other than during peak a.m. and p.m. periods, an average speed of 65 mph was estimated for northbound and southbound travel based on weekday 2019 speed data from PeMS. Speeds on northbound and southbound I-880 in the vicinity of the project site during each hour of the day were also identified using 2019 PeMS data. The average speed for northbound traffic reduced to 60 mph during the a.m. and midday hours, dropped again to 55 mph during the p.m. peak period. For the southbound direction, the average traffic speed reduced to between 45 and 30 mph during the a.m. peak period, raising to 60 mph for the midday and p.m. peak hours.

Hourly emissions rates were developed for DPM, organic TACs, and $PM_{2.5}$ emissions for 2022 traffic along this segment of I-880. TAC and $PM_{2.5}$ concentrations at the construction MEI location were developed using these emissions rates with an air quality dispersion model (AERMOD). Maximum increased lifetime cancer risks and annual $PM_{2.5}$ concentrations for the receptors were then computed using modeled TAC and $PM_{2.5}$ concentrations and BAAQMD methods and exposure parameters described in *Attachment 1*.

Dispersion Modeling

Dispersion modeling of TAC and $PM_{2.5}$ emissions was conducted using the U.S. EPA AERMOD dispersion model, which is recommended by the BAAQMD for this type of analysis. Northbound and southbound traffic on I-880 within about 1,000 feet of the project site was evaluated with the model. Emissions from vehicle traffic were modeled in AERMOD using a series of volume sources along a line (line volume sources), with line segments used to represent northbound and

[29] https://dot.ca.gov/programs/traffic-operations/mpr/pems-source

southbound travel lanes on I-880. The modeling used a five-year data set (2013-2017) of hourly meteorological data from the Hayward Executive Airport in Hayward, CA prepared by the BAAQMD for use with the AERMOD model. Other inputs to the model included road geometry and elevations, hourly traffic emissions, and receptor locations and heights. Figure 2 shows the roadway links used for the modeling, receptor locations where concentrations were calculated, and the location of the construction MEI.

Computed Cancer and Non-Cancer Health Impacts

The calculation of risk impacts from I-880 was developed for an individual that resides at a nearby single-family home starting as a third trimester fetus, growing to be an infant, child, and adult over a 30-year period. Therefore, age-appropriate sensitivity factors were applied. I-880 traffic contributions to cancer risk, annual $PM_{2.5}$ concentrations, and HI are shown in Table 9. Details of the emission calculations, dispersion modeling, and cancer risk calculations are contained in *Attachment 5*.

Local Roadways

Balentine Drive, Alpenrose Drive, and NewPark Mall Road are located near or adjacent to the project. Segments of roadways are estimated to have daily traffic volumes above 10,000 vehicles either currently or shortly after the Costco opens. Traffic on these roadways is a source of TACs that could adversely affect the sensitive receptors living near the project. An assessment of the potential community health risk impacts from these local roadways was conducted following guidance provided by the BAAQMD and OEHHA.

Emission rate estimates for DPM, total organic gases (TOG), and $PM_{2.5}$ were developed for projected traffic volumes on these roadways using emissions factors for 2022. Roadway emissions rates were input into the AERMOD dispersion model to calculate TAC and $PM_{2.5}$ concentrations at receptor locations representing nearby single-family homes. Increased cancer risks, non-cancer health effects represented by the HI, and the increase in annual $PM_{2.5}$ were estimated using the modeled TAC and $PM_{2.5}$ concentrations and the BAAQMD methods and exposure parameters described in *Attachment 1*.

Traffic volumes for the local roadway analysis are based on the existing plus project intersection a.m. and p.m. peak hour volumes provided in the project's transportation assessment developed by the traffic consultant.[30] Daily volumes on Balentine Drive in the vicinity of the project are estimated to be approximately 11,860 vehicles per day, while the segment of Alpenrose Drive accessing the site is estimated to have approximately 10,020 vehicles per day. NewPark Mall Road was estimated to have a daily traffic volume of 13,300 near the new Costco. Truck percentages on these roadways were assumed to be three percent, with 0.8 percent considered medium duty trucks and 2.2 percent being heavy duty trucks.

Modeling Local Roadway Emissions

Analysis of local roadway TAC impacts involved developing estimates of DPM, organic TACs

[30] Sandis, pdf version of "Volume Exhibits.dwg" January 28, 2021.

(as TOG), and $PM_{2.5}$ emissions for 2022. For this analysis, emissions from 2022 were assumed to represent conditions during construction and operation. Emissions associated with vehicle travel depend on the year of analysis because emission control technology requirements are phased-in over time. Overall vehicle emissions, in particular diesel truck emissions, will decrease in the future. Therefore, the earlier the year analyzed, the higher the emission rates produced. Therefore, year 2022 are conservatively assumed as being representative of future conditions over the period that cancer risks are evaluated (30 years).

The fraction of traffic volume each hour on the southbound off ramp and northbound on ramp of I-880 near the project site in 2019 was used to estimate hourly traffic volumes and emissions for the local roadways. Hourly on and off ramp traffic distributions were obtained from Caltrans PeMS. For all hours of the day an average speed of 35 mph was assumed for all vehicles on Balentine Drive. Both Alpenrose Drive and NewPark Mall Road were assumed to have a consistent speed of 25 mph all day long.

As with the analysis of I-880, CT-EMFAC2017 was used to develop vehicle emission factors for local roadways using the mix of vehicles in Alameda County. Emission processes modeled include running exhaust for DPM, $PM_{2.5}$ and TOG, running evaporative losses for TOG, and fugitive road dust for $PM_{2.5}$ that includes tire and brake wear emissions. Inputs to the emissions model include region (i.e., Alameda County), type of road (i.e., major/collector), traffic mix assigned by CT-EMFAC2017 for the county and adjusted for the assumed truck mix (3 percent), year of analysis, and season (i.e., annual).

Hourly emissions rates were developed for DPM, organic TACs, and $PM_{2.5}$ emissions along the applicable segments of each local roadway. TAC and $PM_{2.5}$ concentrations at the receptors representing the single-family homes across I-880 from the project area were developed using the hourly emissions rates and AERMOD. Maximum increased lifetime cancer risks and annual $PM_{2.5}$ concentrations for the maximum concentration receptor for each roadway and for the construction MEI were computed using modeled TAC and $PM_{2.5}$ concentrations and the BAAQMD methods and exposure parameters described in *Attachment 1*.

Dispersion Modeling

Dispersion modeling of TAC and $PM_{2.5}$ emissions was conducted using the EPA AERMOD air quality dispersion model, which is recommended by the BAAQMD for this type of analysis.[31] TAC and $PM_{2.5}$ emissions from traffic on the local roadways with daily volumes over 10,000 vehicles per day and within 1,000 ft of the project site were evaluated. Vehicle traffic on the roadways was modeled using a series of adjacent area sources along a line (line area sources). A 5-year data set (2013-2017) of hourly meteorological data from the Hayward Executive Airport was used for the modeling. Other inputs to the model included road geometries and elevations, hourly traffic emissions, and receptor locations. Annual TAC and $PM_{2.5}$ concentrations for 2022 from traffic on Balentine Drive, Alpenrose Drive, and NewPark Mall Road were calculated using AERMOD. Concentrations were calculated at each receptor location with receptor heights of 5 feet (1.5 meters) to represent the breathing heights of people on the first floors of the nearby single-

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

family homes. Figure 2 shows the roadway links used for the modeling, the receptor locations where concentrations were calculated, and the location of the construction MEI.

Local roadway traffic contributions to cancer risk, annual $PM_{2.5}$ concentrations, and HI are shown in Table 9. Details of the emission calculations, dispersion modeling, and cancer risk calculations are contained in *Attachment 5*.

Stationary Sources

Permitted stationary sources of air pollution near the project site were identified using BAAQMD's *Permitted Stationary Sources 2018* GIS website,[32] which identifies the location of nearby stationary sources and their estimated risk and hazard impacts, including emissions and adjustments to account for new OEHHA guidance. Three nearby stationary sources were identified:

- Plant #16256 is a diesel-powered emergency generator at the NewPark Mall's Macy's store.
- Plant #17115 is a coating operation at a nearby autobody repair shop.
- Plant #23265 is a diesel-powered emergency generator at the NewPark Mall.

A Stationary Source Inquiry Form (SSIF) was completed and sent to BAAQMD for the sources identified near the project. BAAQMD then provided the applicable concentrations and/or risk values needed for the analysis.[33] Risk values were adjusted for distance using the appropriate BAAQMD *Distance Multiplier Tool for Diesel Internal Combustion Engines, Gasoline Dispensing Facilities (GDFs), or Generic Sources*. Distance-adjusted risk values for each stationary source at the construction MEI are listed in Table 9. None of the existing stationary sources exceed BAAQMD single-source thresholds at the construction MEI.

Combined Community Health Risk at Off-Site MEI

Table 9 reports both the project and cumulative community risk impacts at the sensitive receptors most affected by construction (i.e., the construction MEI) and the GDF. The project's community risk from combined activities (i.e., construction and operation) would not exceed the BAAQMD single-source health risk thresholds for cancer risk, annual $PM_{2.5}$ concentration, or non-cancer HI given the unmitigated condition. Likewise, the cumulative source thresholds for cancer risk and non-cancer HI would not be exceeded at the MEI. However, the cumulative annual $PM_{2.5}$ concentration at the MEI would exceed the BAAQMD cumulative source threshold due to the emissions from I-880 and the proximity of the construction MEI to I-880 (approximately 103 feet).

Cumulative annual $PM_{2.5}$ concentrations without the project effects exceed the cumulative threshold at the MEI. This is mostly the result of emissions from I-880 traffic, where ethe MEI is adjacent to the I-880 right-of-way. Since the health impacts associated with construction of the project are below the BAAQMD single source thresholds, it would not be considered to have a

[32] BAAQMD, https://baaqmd.maps.arcgis.com/apps/webappviewer/index.html?id=2387ae674013413f987b1071715daa65
[33] Correspondence with Areana Flores, MSc, Environmental Planner, BAAQMD, March 4, 2021.

significant contribution to the MEI.[34] As such, no mitigation would be required on the part of the construction project to mitigate the exceedance of the cumulative source threshold for annual $PM_{2.5}$ concentration.

Table 9. Impacts from Combined Sources at Off-Site Construction MEI

Source	Cancer Risk (per million)	Annual $PM_{2.5}$ ($\mu g/m^3$)	Hazard Index
Project Impacts			
Costco Construction (Years 0 – 2)	4.52	0.07	<0.01
Phase A Construction (Years 0 – 3)*	0.53	0.01	<0.01
GDF Operations (Years 3 – 30)	0.98	<0.01	<0.03
Total (30 Years)	6.03	<0.08	<0.04
BAAQMD Single-Source Threshold	***10***	***0.3***	***1.0***
Exceed Threshold? Unmitigated	*No*	*No*	*No*
Cumulative Impacts			
I-880	85.1	**1.92**	0.02
Balentine Drive	0.02	<0.01	<0.01
Alpenrose Drive	0.01	<0.01	<0.01
NewPark Mall Road	1.55	0.05	<0.01
Plant #16256 (Generator)	0.03	0.00	<0.01
Plant #17115 (Coating Operation)	<0.01	<0.01	<0.01
Plant #23265 (Generator)	0.02	0.00	<0.01
Cumulative Total	92.77	**2.17**	<0.13
BAAQMD Cumulative Source Threshold	***100***	***0.8***	***10.0***
Exceed Threshold?	*No*	***Yes***	*No*

* Health risks associated with Construction of Phase A assessed in a separate report.

[34] Correspondence with Areana Flores, MSc, Environmental Planner, BAAQMD, February 23, 2021.

Supporting Documentation

Attachment 1 is the methodology used to compute community risk impacts, including the methods to compute lifetime cancer risk from exposure to project emissions.

Attachment 2 includes the CalEEMod modeling assumptions and output for project construction and operational criteria air pollutant emissions. The operational outputs for existing uses are also included in this attachment. GDF calculations for evaporative emissions are also provided in this attachment.

Attachment 3 includes the EMFAC2017 emissions modeling. The input files for these calculations are voluminous and are available upon request in digital format.

Attachment 4 is the construction health risk assessment. AERMOD dispersion modeling files for this assessment, which are quite voluminous, are available upon request and would be provided in digital format.

Attachment 5 includes the cumulative community risk calculations, modeling results, and health risk calculations from sources affecting the project and construction MEIs.

Attachment 6 includes the GDF emissions calculations, dispersion modeling parameters, and health risk calculations. The total project health risk evaluation is also included in this 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.[35] 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.[36] 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.[37] 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,

[35] 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.
[36] CARB, 2015. *Risk Management Guidance for Stationary Sources of Air Toxics*. July 23.
[37] 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.

Attachment 2: CalEEMod Modeling Output

NewPark - Costco

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	405.00	Space	0.00	266,020.00	0
Discount Club	161.80	1000sqft	7.50	161,800.00	0
Gasoline/Service Station	32.00	Pump	0.00	4,517.60	0

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 - PG&E Rate

Land Use - Based on 11.12.2020 plans

Construction Phase - Per construction data request 27-01-20

Demolition - Based on 11.12.2020 plans and Per Construction Data Request 27-01-20

Off-road Equipment - Per Construction Data Request 27-01-20

Off-road Equipment - Site Prep part of Grading Phase

Off-road Equipment - Per Construction Data Request 27-01-20

Off-road Equipment - Per Construction Data Request

Off-road Equipment - Per Construction Data Request 27-01-20

Off-road Equipment - Per Construction Data Request 27-01-20

Off-road Equipment - Per Construction Data Request 27-01-20, scissor lifts will be used

Grading - Per Construction Data Request 27-01-20

Trips and VMT - Per Construction Data Request 27-01-20; 100 Concrete deliveries (200 haul trips), 330 asphalt deliveries - based on 10 CY per delivery and 3,300 CY

Architectural Coating - Per Construction Data Request 27-01-20

Vehicle Trips - Based on daily trip estimates from "NewPark Costco Traffic Data for AQ + Noise"

Vehicle Emission Factors - Based on EMFAC2017

Vehicle Emission Factors -

Vehicle Emission Factors -

Area Coating - Per Construction Data Request 27-01-20

Energy Use -

Water And Wastewater - Assume 100% WWTP

Construction Off-road Equipment Mitigation - Basic Dust BMPs and T4i

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Parking	15,961.00	266,020.00
tblAreaCoating	Area_Parking	15961	266020
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00
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	3.00
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tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
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tblConstEquipMitigation	Tier	No Change	Tier 4 Interim
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tblConstructionPhase	NumDays	20.00	40.00
tblConstructionPhase	NumDays	20.00	15.00
tblConstructionPhase	NumDays	10.00	20.00
tblFleetMix	HHD	0.05	0.04
tblFleetMix	HHD	0.05	0.04
tblFleetMix	HHD	0.05	0.04
tblFleetMix	LDA	0.56	0.56
tblFleetMix	LDA	0.56	0.56
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tblFleetMix	LDT1	0.04	0.05
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tblFleetMix	LHD1	0.02	0.02
tblFleetMix	LHD2	5.1800e-003	5.1892e-003
tblFleetMix	LHD2	5.1800e-003	5.1892e-003
tblFleetMix	LHD2	5.1800e-003	5.1892e-003
tblFleetMix	MCY	5.4910e-003	5.1133e-003
tblFleetMix	MCY	5.4910e-003	5.1133e-003
tblFleetMix	MCY	5.4910e-003	5.1133e-003
tblFleetMix	MDV	0.11	0.11
tblFleetMix	MDV	0.11	0.11
tblFleetMix	MDV	0.11	0.11
tblFleetMix	MH	7.0400e-004	6.7318e-004
tblFleetMix	MH	7.0400e-004	6.7318e-004
tblFleetMix	MH	7.0400e-004	6.7318e-004
tblFleetMix	MHD	0.02	0.02
tblFleetMix	MHD	0.02	0.02
tblFleetMix	MHD	0.02	0.02
tblFleetMix	OBUS	2.2090e-003	1.3295e-003
tblFleetMix	OBUS	2.2090e-003	1.3295e-003
tblFleetMix	OBUS	2.2090e-003	1.3295e-003
tblFleetMix	SBUS	3.3400e-004	3.3176e-004
tblFleetMix	SBUS	3.3400e-004	3.3176e-004
tblFleetMix	SBUS	3.3400e-004	3.3176e-004
tblFleetMix	UBUS	2.4560e-003	1.8273e-003
tblFleetMix	UBUS	2.4560e-003	1.8273e-003
tblFleetMix	UBUS	2.4560e-003	1.8273e-003
tblGrading	AcresOfGrading	120.00	10.00
tblGrading	MaterialExported	0.00	8,900.00
tblLandUse	LandUseSquareFeet	162,000.00	266,020.00
tblLandUse	LotAcreage	3.64	0.00
tblLandUse	LotAcreage	3.71	7.50
tblLandUse	LotAcreage	0.10	0.00
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.43	0.43
tblOffRoadEquipment	LoadFactor	0.48	0.48
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.37	0.37
tblOffRoadEquipment	LoadFactor	0.31	0.31
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Crawler Tractors
tblOffRoadEquipment	OffRoadEquipmentType		Scrapers
tblOffRoadEquipment	OffRoadEquipmentType		Rollers

tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Plate Compactors
tblOffRoadEquipment	OffRoadEquipmentType		Tractors/Loaders/Backhoes
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Pumps
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentType		Aerial Lifts
tblOffRoadEquipment	OffRoadEquipmentType		Pressure Washers
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	7.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	210
tblTripsAndVMT	HaulingTripLength	20.00	7.30
tblTripsAndVMT	HaulingTripLength	20.00	7.30
tblTripsAndVMT	HaulingTripNumber	2,996.00	0.00
tblTripsAndVMT	HaulingTripNumber	1,113.00	0.00
tblTripsAndVMT	VendorTripNumber	71.00	0.00
tblTripsAndVMT	WorkerTripNumber	33.00	0.00
tblTripsAndVMT	WorkerTripNumber	20.00	0.00
tblTripsAndVMT	WorkerTripNumber	15.00	0.00
tblTripsAndVMT	WorkerTripNumber	165.00	0.00
tblTripsAndVMT	WorkerTripNumber	33.00	0.00
tblTripsAndVMT	WorkerTripNumber	10.00	0.00
tblVehicleEF	HHD	0.62	0.02
tblVehicleEF	HHD	0.04	0.03
tblVehicleEF	HHD	0.08	0.00
tblVehicleEF	HHD	1.68	6.67
tblVehicleEF	HHD	0.78	0.34
tblVehicleEF	HHD	2.05	4.2510e-003
tblVehicleEF	HHD	4,767.28	1,103.40

tblVehicleEF	HHD	1,547.06	1,394.59
tblVehicleEF	HHD	6.46	0.05
tblVehicleEF	HHD	14.52	5.51
tblVehicleEF	HHD	2.04	2.58
tblVehicleEF	HHD	20.07	2.28
tblVehicleEF	HHD	6.5450e-003	2.4080e-003
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	6.1300e-003	0.03
tblVehicleEF	HHD	5.2000e-005	0.00
tblVehicleEF	HHD	6.2620e-003	2.3040e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8970e-003	8.9230e-003
tblVehicleEF	HHD	5.8640e-003	0.02
tblVehicleEF	HHD	4.8000e-005	0.00
tblVehicleEF	HHD	4.8000e-005	2.0000e-006
tblVehicleEF	HHD	2.8330e-003	7.7000e-005
tblVehicleEF	HHD	0.44	0.45
tblVehicleEF	HHD	3.3000e-005	1.0000e-006
tblVehicleEF	HHD	0.09	0.02
tblVehicleEF	HHD	2.1500e-004	3.9700e-004
tblVehicleEF	HHD	0.05	1.0000e-006
tblVehicleEF	HHD	0.04	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	9.8000e-005	0.00
tblVehicleEF	HHD	4.8000e-005	2.0000e-006
tblVehicleEF	HHD	2.8330e-003	7.7000e-005
tblVehicleEF	HHD	0.51	0.52
tblVehicleEF	HHD	3.3000e-005	1.0000e-006
tblVehicleEF	HHD	0.14	0.06
tblVehicleEF	HHD	2.1500e-004	3.9700e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	LDA	3.8970e-003	2.1170e-003
tblVehicleEF	LDA	5.6840e-003	0.05
tblVehicleEF	LDA	0.53	0.57
tblVehicleEF	LDA	1.25	2.24
tblVehicleEF	LDA	244.94	250.63
tblVehicleEF	LDA	56.21	53.04
tblVehicleEF	LDA	0.05	0.04
tblVehicleEF	LDA	0.07	0.19
tblVehicleEF	LDA	1.7490e-003	1.4470e-003
tblVehicleEF	LDA	2.2460e-003	1.7590e-003
tblVehicleEF	LDA	1.6120e-003	1.3340e-003
tblVehicleEF	LDA	2.0650e-003	1.6170e-003
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.11	0.10
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	9.8450e-003	8.2240e-003
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.08	0.23

tblVehicleEF	LDA	2.4520e-003	2.4480e-003
tblVehicleEF	LDA	5.8300e-004	5.1800e-004
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.11	0.10
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.08	0.25
tblVehicleEF	LDT1	8.0930e-003	4.2580e-003
tblVehicleEF	LDT1	0.01	0.07
tblVehicleEF	LDT1	0.99	0.93
tblVehicleEF	LDT1	2.67	2.45
tblVehicleEF	LDT1	300.74	299.25
tblVehicleEF	LDT1	69.06	64.04
tblVehicleEF	LDT1	0.10	0.08
tblVehicleEF	LDT1	0.15	0.25
tblVehicleEF	LDT1	2.2930e-003	1.8240e-003
tblVehicleEF	LDT1	3.0800e-003	2.3280e-003
tblVehicleEF	LDT1	2.1120e-003	1.6790e-003
tblVehicleEF	LDT1	2.8320e-003	2.1410e-003
tblVehicleEF	LDT1	0.08	0.08
tblVehicleEF	LDT1	0.24	0.18
tblVehicleEF	LDT1	0.07	0.07
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	0.15	0.65
tblVehicleEF	LDT1	0.18	0.34
tblVehicleEF	LDT1	3.0180e-003	2.9240e-003
tblVehicleEF	LDT1	7.3700e-004	6.2600e-004
tblVehicleEF	LDT1	0.08	0.08
tblVehicleEF	LDT1	0.24	0.18
tblVehicleEF	LDT1	0.07	0.07
tblVehicleEF	LDT1	0.03	0.03
tblVehicleEF	LDT1	0.15	0.65
tblVehicleEF	LDT1	0.19	0.37
tblVehicleEF	LDT2	5.0510e-003	3.2180e-003
tblVehicleEF	LDT2	6.9140e-003	0.07
tblVehicleEF	LDT2	0.66	0.75
tblVehicleEF	LDT2	1.52	2.87
tblVehicleEF	LDT2	339.26	321.40
tblVehicleEF	LDT2	77.68	69.31
tblVehicleEF	LDT2	0.07	0.07
tblVehicleEF	LDT2	0.11	0.28
tblVehicleEF	LDT2	1.7210e-003	1.4410e-003
tblVehicleEF	LDT2	2.3050e-003	1.7620e-003
tblVehicleEF	LDT2	1.5830e-003	1.3260e-003
tblVehicleEF	LDT2	2.1190e-003	1.6200e-003
tblVehicleEF	LDT2	0.04	0.06
tblVehicleEF	LDT2	0.11	0.13
tblVehicleEF	LDT2	0.04	0.06
tblVehicleEF	LDT2	0.01	0.01

tblVehicleEF	LDT2	0.06	0.44
tblVehicleEF	LDT2	0.09	0.32
tblVehicleEF	LDT2	3.3970e-003	3.1400e-003
tblVehicleEF	LDT2	8.0200e-004	6.7700e-004
tblVehicleEF	LDT2	0.04	0.06
tblVehicleEF	LDT2	0.11	0.13
tblVehicleEF	LDT2	0.04	0.06
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.06	0.44
tblVehicleEF	LDT2	0.10	0.35
tblVehicleEF	LHD1	5.4470e-003	5.3750e-003
tblVehicleEF	LHD1	0.02	8.9070e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.19
tblVehicleEF	LHD1	1.08	0.81
tblVehicleEF	LHD1	2.63	1.12
tblVehicleEF	LHD1	9.01	8.94
tblVehicleEF	LHD1	694.94	806.45
tblVehicleEF	LHD1	32.75	12.21
tblVehicleEF	LHD1	0.07	0.06
tblVehicleEF	LHD1	1.26	0.76
tblVehicleEF	LHD1	1.04	0.34
tblVehicleEF	LHD1	8.7000e-004	7.9200e-004
tblVehicleEF	LHD1	0.01	9.6770e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	9.3800e-004	2.6000e-004
tblVehicleEF	LHD1	8.3200e-004	7.5800e-004
tblVehicleEF	LHD1	2.5100e-003	2.4190e-003
tblVehicleEF	LHD1	0.02	9.8820e-003
tblVehicleEF	LHD1	8.6300e-004	2.3900e-004
tblVehicleEF	LHD1	2.3470e-003	1.8480e-003
tblVehicleEF	LHD1	0.10	0.08
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.3470e-003	1.0560e-003
tblVehicleEF	LHD1	0.12	0.09
tblVehicleEF	LHD1	0.30	0.55
tblVehicleEF	LHD1	0.27	0.08
tblVehicleEF	LHD1	9.0000e-005	8.7000e-005
tblVehicleEF	LHD1	6.8250e-003	7.8810e-003
tblVehicleEF	LHD1	3.7700e-004	1.2100e-004
tblVehicleEF	LHD1	2.3470e-003	1.8480e-003
tblVehicleEF	LHD1	0.10	0.08
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.3470e-003	1.0560e-003
tblVehicleEF	LHD1	0.15	0.12
tblVehicleEF	LHD1	0.30	0.55
tblVehicleEF	LHD1	0.29	0.09
tblVehicleEF	LHD2	3.6270e-003	3.6920e-003
tblVehicleEF	LHD2	8.0300e-003	7.1740e-003
tblVehicleEF	LHD2	7.5680e-003	9.9610e-003

tblVehicleEF	LHD2	0.13	0.15
tblVehicleEF	LHD2	0.58	0.63
tblVehicleEF	LHD2	1.26	0.72
tblVehicleEF	LHD2	13.84	13.61
tblVehicleEF	LHD2	714.57	797.43
tblVehicleEF	LHD2	25.84	9.13
tblVehicleEF	LHD2	0.10	0.09
tblVehicleEF	LHD2	0.78	0.86
tblVehicleEF	LHD2	0.51	0.22
tblVehicleEF	LHD2	1.2000e-003	1.2930e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	4.1700e-004	1.4400e-004
tblVehicleEF	LHD2	1.1480e-003	1.2380e-003
tblVehicleEF	LHD2	2.6730e-003	2.6420e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.8400e-004	1.3200e-004
tblVehicleEF	LHD2	8.1400e-004	1.0880e-003
tblVehicleEF	LHD2	0.03	0.05
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	4.9300e-004	6.3200e-004
tblVehicleEF	LHD2	0.11	0.11
tblVehicleEF	LHD2	0.07	0.32
tblVehicleEF	LHD2	0.10	0.05
tblVehicleEF	LHD2	1.3500e-004	1.3000e-004
tblVehicleEF	LHD2	6.9560e-003	7.7200e-003
tblVehicleEF	LHD2	2.8100e-004	9.0000e-005
tblVehicleEF	LHD2	8.1400e-004	1.0880e-003
tblVehicleEF	LHD2	0.03	0.05
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.9300e-004	6.3200e-004
tblVehicleEF	LHD2	0.12	0.13
tblVehicleEF	LHD2	0.07	0.32
tblVehicleEF	LHD2	0.11	0.05
tblVehicleEF	MCY	0.46	0.34
tblVehicleEF	MCY	0.17	0.26
tblVehicleEF	MCY	20.03	20.15
tblVehicleEF	MCY	10.24	9.10
tblVehicleEF	MCY	174.71	215.41
tblVehicleEF	MCY	45.85	61.83
tblVehicleEF	MCY	1.17	1.17
tblVehicleEF	MCY	0.32	0.27
tblVehicleEF	MCY	2.1220e-003	2.0690e-003
tblVehicleEF	MCY	3.9700e-003	3.1980e-003
tblVehicleEF	MCY	1.9850e-003	1.9350e-003
tblVehicleEF	MCY	3.7430e-003	3.0120e-003
tblVehicleEF	MCY	0.81	0.80
tblVehicleEF	MCY	0.74	0.73
tblVehicleEF	MCY	0.50	0.50
tblVehicleEF	MCY	2.33	2.34

tblVehicleEF	MCY	0.60	2.18
tblVehicleEF	MCY	2.26	1.99
tblVehicleEF	MCY	2.1430e-003	2.1320e-003
tblVehicleEF	MCY	6.9300e-004	6.1200e-004
tblVehicleEF	MCY	0.81	0.80
tblVehicleEF	MCY	0.74	0.73
tblVehicleEF	MCY	0.50	0.50
tblVehicleEF	MCY	2.88	2.89
tblVehicleEF	MCY	0.60	2.18
tblVehicleEF	MCY	2.46	2.17
tblVehicleEF	MDV	9.7550e-003	3.8520e-003
tblVehicleEF	MDV	0.02	0.08
tblVehicleEF	MDV	1.05	0.83
tblVehicleEF	MDV	2.91	3.26
tblVehicleEF	MDV	457.07	386.78
tblVehicleEF	MDV	102.80	83.08
tblVehicleEF	MDV	0.13	0.08
tblVehicleEF	MDV	0.25	0.34
tblVehicleEF	MDV	1.8870e-003	1.5680e-003
tblVehicleEF	MDV	2.5190e-003	1.9540e-003
tblVehicleEF	MDV	1.7400e-003	1.4460e-003
tblVehicleEF	MDV	2.3160e-003	1.7970e-003
tblVehicleEF	MDV	0.06	0.07
tblVehicleEF	MDV	0.17	0.14
tblVehicleEF	MDV	0.06	0.07
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	0.10	0.47
tblVehicleEF	MDV	0.22	0.41
tblVehicleEF	MDV	4.5760e-003	3.7760e-003
tblVehicleEF	MDV	1.0790e-003	8.1200e-004
tblVehicleEF	MDV	0.06	0.07
tblVehicleEF	MDV	0.17	0.14
tblVehicleEF	MDV	0.06	0.07
tblVehicleEF	MDV	0.04	0.02
tblVehicleEF	MDV	0.10	0.47
tblVehicleEF	MDV	0.24	0.45
tblVehicleEF	MH	0.03	0.01
tblVehicleEF	MH	0.03	0.02
tblVehicleEF	MH	2.15	1.09
tblVehicleEF	MH	5.90	2.17
tblVehicleEF	MH	1,214.25	1,537.97
tblVehicleEF	MH	59.49	19.02
tblVehicleEF	MH	1.30	1.27
tblVehicleEF	MH	0.86	0.25
tblVehicleEF	MH	0.01	0.01
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	1.1590e-003	2.7900e-004
tblVehicleEF	MH	3.2120e-003	3.2610e-003
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	1.0660e-003	2.5600e-004

tblVehicleEF	MH	0.75	0.61
tblVehicleEF	MH	0.07	0.06
tblVehicleEF	MH	0.29	0.24
tblVehicleEF	MH	0.10	0.07
tblVehicleEF	MH	0.02	1.41
tblVehicleEF	MH	0.34	0.10
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	6.9800e-004	1.8800e-004
tblVehicleEF	MH	0.75	0.61
tblVehicleEF	MH	0.07	0.06
tblVehicleEF	MH	0.29	0.24
tblVehicleEF	MH	0.13	0.09
tblVehicleEF	MH	0.02	1.41
tblVehicleEF	MH	0.37	0.11
tblVehicleEF	MHD	0.02	2.7380e-003
tblVehicleEF	MHD	3.7500e-003	1.5030e-003
tblVehicleEF	MHD	0.05	7.1960e-003
tblVehicleEF	MHD	0.29	0.36
tblVehicleEF	MHD	0.32	0.22
tblVehicleEF	MHD	4.66	0.85
tblVehicleEF	MHD	166.31	73.92
tblVehicleEF	MHD	1,184.93	1,059.43
tblVehicleEF	MHD	46.12	7.10
tblVehicleEF	MHD	0.46	0.43
tblVehicleEF	MHD	1.12	1.43
tblVehicleEF	MHD	12.97	1.81
tblVehicleEF	MHD	1.2900e-004	3.5500e-004
tblVehicleEF	MHD	3.0820e-003	6.8020e-003
tblVehicleEF	MHD	6.6500e-004	8.1000e-005
tblVehicleEF	MHD	1.2300e-004	3.4000e-004
tblVehicleEF	MHD	2.9450e-003	6.5030e-003
tblVehicleEF	MHD	6.1100e-004	7.5000e-005
tblVehicleEF	MHD	6.8000e-004	2.7800e-004
tblVehicleEF	MHD	0.04	0.01
tblVehicleEF	MHD	0.02	0.02
tblVehicleEF	MHD	3.9700e-004	1.6300e-004
tblVehicleEF	MHD	0.04	0.01
tblVehicleEF	MHD	0.01	0.09
tblVehicleEF	MHD	0.28	0.04
tblVehicleEF	MHD	1.5960e-003	7.0100e-004
tblVehicleEF	MHD	0.01	0.01
tblVehicleEF	MHD	5.4300e-004	7.0000e-005
tblVehicleEF	MHD	6.8000e-004	2.7800e-004
tblVehicleEF	MHD	0.04	0.01
tblVehicleEF	MHD	0.03	0.02
tblVehicleEF	MHD	3.9700e-004	1.6300e-004
tblVehicleEF	MHD	0.05	0.02
tblVehicleEF	MHD	0.01	0.09
tblVehicleEF	MHD	0.31	0.04
tblVehicleEF	OBUS	0.01	8.4730e-003

tblVehicleEF	OBUS	8.2390e-003	7.2810e-003
tblVehicleEF	OBUS	0.03	0.02
tblVehicleEF	OBUS	0.24	0.58
tblVehicleEF	OBUS	0.56	0.81
tblVehicleEF	OBUS	5.79	2.54
tblVehicleEF	OBUS	108.13	82.95
tblVehicleEF	OBUS	1,293.96	1,469.46
tblVehicleEF	OBUS	66.33	19.88
tblVehicleEF	OBUS	0.23	0.32
tblVehicleEF	OBUS	0.91	1.23
tblVehicleEF	OBUS	3.06	0.80
tblVehicleEF	OBUS	2.1000e-005	1.0600e-004
tblVehicleEF	OBUS	2.6580e-003	6.8520e-003
tblVehicleEF	OBUS	8.5400e-004	1.9300e-004
tblVehicleEF	OBUS	2.0000e-005	1.0200e-004
tblVehicleEF	OBUS	2.5240e-003	6.5370e-003
tblVehicleEF	OBUS	7.8500e-004	1.7800e-004
tblVehicleEF	OBUS	1.2020e-003	1.4590e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.03	0.05
tblVehicleEF	OBUS	5.6300e-004	6.8900e-004
tblVehicleEF	OBUS	0.05	0.04
tblVehicleEF	OBUS	0.04	0.27
tblVehicleEF	OBUS	0.35	0.12
tblVehicleEF	OBUS	1.0430e-003	7.9000e-004
tblVehicleEF	OBUS	0.01	0.01
tblVehicleEF	OBUS	7.6500e-004	1.9700e-004
tblVehicleEF	OBUS	1.2020e-003	1.4590e-003
tblVehicleEF	OBUS	0.02	0.02
tblVehicleEF	OBUS	0.05	0.07
tblVehicleEF	OBUS	5.6300e-004	6.8900e-004
tblVehicleEF	OBUS	0.06	0.06
tblVehicleEF	OBUS	0.04	0.27
tblVehicleEF	OBUS	0.39	0.13
tblVehicleEF	SBUS	0.84	0.07
tblVehicleEF	SBUS	0.02	4.4000e-003
tblVehicleEF	SBUS	0.07	5.8300e-003
tblVehicleEF	SBUS	10.65	2.77
tblVehicleEF	SBUS	1.01	0.35
tblVehicleEF	SBUS	11.22	0.85
tblVehicleEF	SBUS	974.60	342.95
tblVehicleEF	SBUS	934.35	997.56
tblVehicleEF	SBUS	72.90	4.89
tblVehicleEF	SBUS	6.31	2.88
tblVehicleEF	SBUS	2.72	3.57
tblVehicleEF	SBUS	9.19	1.11
tblVehicleEF	SBUS	5.9520e-003	2.9750e-003
tblVehicleEF	SBUS	9.7910e-003	0.01
tblVehicleEF	SBUS	0.01	0.02
tblVehicleEF	SBUS	1.2910e-003	6.9000e-005

tblVehicleEF	SBUS	5.6940e-003	2.8460e-003
tblVehicleEF	SBUS	2.4480e-003	2.6500e-003
tblVehicleEF	SBUS	0.01	0.02
tblVehicleEF	SBUS	1.1870e-003	6.3000e-005
tblVehicleEF	SBUS	2.9140e-003	3.2800e-004
tblVehicleEF	SBUS	0.03	3.2320e-003
tblVehicleEF	SBUS	1.28	0.31
tblVehicleEF	SBUS	1.3900e-003	1.5600e-004
tblVehicleEF	SBUS	0.09	0.06
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	0.55	0.03
tblVehicleEF	SBUS	9.6730e-003	3.2700e-003
tblVehicleEF	SBUS	9.0870e-003	9.5530e-003
tblVehicleEF	SBUS	9.2200e-004	4.8000e-005
tblVehicleEF	SBUS	2.9140e-003	3.2800e-004
tblVehicleEF	SBUS	0.03	3.2320e-003
tblVehicleEF	SBUS	1.85	0.44
tblVehicleEF	SBUS	1.3900e-003	1.5600e-004
tblVehicleEF	SBUS	0.12	0.07
tblVehicleEF	SBUS	0.02	0.02
tblVehicleEF	SBUS	0.60	0.04
tblVehicleEF	UBUS	0.27	1.03
tblVehicleEF	UBUS	0.04	1.0300e-003
tblVehicleEF	UBUS	6.51	7.45
tblVehicleEF	UBUS	7.42	0.07
tblVehicleEF	UBUS	2,210.19	1,639.89
tblVehicleEF	UBUS	75.27	0.84
tblVehicleEF	UBUS	15.33	1.12
tblVehicleEF	UBUS	16.64	8.7750e-003
tblVehicleEF	UBUS	0.66	0.08
tblVehicleEF	UBUS	0.01	0.03
tblVehicleEF	UBUS	0.32	5.6470e-003
tblVehicleEF	UBUS	8.7700e-004	6.0000e-006
tblVehicleEF	UBUS	0.28	0.03
tblVehicleEF	UBUS	3.0000e-003	8.5390e-003
tblVehicleEF	UBUS	0.30	5.4020e-003
tblVehicleEF	UBUS	8.0700e-004	6.0000e-006
tblVehicleEF	UBUS	2.2740e-003	4.8000e-005
tblVehicleEF	UBUS	0.05	6.9100e-004
tblVehicleEF	UBUS	1.1250e-003	3.1000e-005
tblVehicleEF	UBUS	0.79	0.01
tblVehicleEF	UBUS	0.01	4.1210e-003
tblVehicleEF	UBUS	0.56	4.4800e-003
tblVehicleEF	UBUS	0.02	0.01
tblVehicleEF	UBUS	8.8600e-004	8.0000e-006
tblVehicleEF	UBUS	2.2740e-003	4.8000e-005
tblVehicleEF	UBUS	0.05	6.9100e-004
tblVehicleEF	UBUS	1.1250e-003	3.1000e-005
tblVehicleEF	UBUS	1.12	1.05
tblVehicleEF	UBUS	0.01	4.1210e-003

tblVehicleEF	UBUS	0.61	4.9060e-003
tblVehicleTrips	ST_TR	53.75	35.13
tblVehicleTrips	ST_TR	168.56	176.00
tblVehicleTrips	SU_TR	33.67	22.00
tblVehicleTrips	SU_TR	168.56	176.00
tblVehicleTrips	WD_TR	41.80	27.32
tblVehicleTrips	WD_TR	168.56	176.00
tblWater	AerobicPercent	87.46	100.00
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	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	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	0.1861	2.0403	2.3197	3.9100e-003	0.3300	0.0884	0.4184	0.0497	0.0813	0.1311	0.0000	343.2656	343.2656	0.1109	0.0000	346.0376
2022	1.8579	0.6321	0.7641	1.3100e-003	0.0000	0.0273	0.0273	0.0000	0.0259	0.0259	0.0000	112.4059	112.4059	0.0283	0.0000	113.1145
Maximum	**1.8579**	**2.0403**	**2.3197**	**3.9100e-003**	**0.3300**	**0.0884**	**0.4184**	**0.0497**	**0.0813**	**0.1311**	**0.0000**	**343.2656**	**343.2656**	**0.1109**	**0.0000**	**346.0376**

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	0.0650	1.6800	2.7556	3.9100e-003	0.1485	0.0275	0.1760	0.0224	0.0275	0.0499	0.0000	343.2652	343.2652	0.1109	0.0000	346.0372
2022	1.8163	0.5761	0.8745	1.3100e-003	0.0000	0.0119	0.0119	0.0000	0.0119	0.0119	0.0000	112.4058	112.4058	0.0283	0.0000	113.1144
Maximum	**1.8163**	**1.6800**	**2.7556**	**3.9100e-003**	**0.1485**	**0.0275**	**0.1760**	**0.0224**	**0.0275**	**0.0499**	**0.0000**	**343.2652**	**343.2652**	**0.1109**	**0.0000**	**346.0372**

	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	**7.96**	**15.58**	**-17.71**	**0.00**	**55.00**	**66.02**	**57.86**	**55.00**	**63.33**	**60.69**	**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	5-31-2021	8-30-2021	0.6739	0.7021
2	8-31-2021	11-29-2021	0.9021	0.7141
3	11-30-2021	2-27-2022	1.3329	1.0031

4	2-28-2022	5-30-2022	1.7059	1.6376
		Highest	1.7059	1.6376

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	0.8465	5.0000e-005	5.5000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0107	0.0107	3.0000e-005	0.0000	0.0114
Energy	4.6200e-003	0.0420	0.0353	2.5000e-004		3.1900e-003	3.1900e-003		3.1900e-003	3.1900e-003	0.0000	219.3258	219.3258	0.0249	5.8000e-003	221.6752
Mobile	3.5110	5.0219	19.0844	0.0440	3.7775	0.0403	3.8178	1.0127	0.0378	1.0505	0.0000	4,139.0450	4,139.0450	0.2837	0.0000	4,146.1374
Waste						0.0000	0.0000		0.0000	0.0000	144.7529	0.0000	144.7529	8.5547	0.0000	358.6191
Water						0.0000	0.0000		0.0000	0.0000	4.3907	8.9322	13.3228	0.0164	9.8000e-003	16.6529
Total	**4.3621**	**5.0639**	**19.1251**	**0.0442**	**3.7775**	**0.0435**	**3.8210**	**1.0127**	**0.0410**	**1.0537**	**149.1435**	**4,367.3137**	**4,516.4572**	**8.8796**	**0.0156**	**4,743.0959**

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	0.8465	5.0000e-005	5.5000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0107	0.0107	3.0000e-005	0.0000	0.0114
Energy	4.6200e-003	0.0420	0.0353	2.5000e-004		3.1900e-003	3.1900e-003		3.1900e-003	3.1900e-003	0.0000	219.3258	219.3258	0.0249	5.8000e-003	221.6752
Mobile	3.5110	5.0219	19.0844	0.0440	3.7775	0.0403	3.8178	1.0127	0.0378	1.0505	0.0000	4,139.0450	4,139.0450	0.2837	0.0000	4,146.1374
Waste						0.0000	0.0000		0.0000	0.0000	144.7529	0.0000	144.7529	8.5547	0.0000	358.6191
Water						0.0000	0.0000		0.0000	0.0000	4.3907	8.9322	13.3228	0.0164	9.8000e-003	16.6529
Total	**4.3621**	**5.0639**	**19.1251**	**0.0442**	**3.7775**	**0.0435**	**3.8210**	**1.0127**	**0.0410**	**1.0537**	**149.1435**	**4,367.3137**	**4,516.4572**	**8.8796**	**0.0156**	**4,743.0959**

	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	Demolition	Demolition	5/31/2021	11/5/2021	5	115	
2	Site Preparation	Site Preparation	10/11/2021	11/5/2021	5	20	
3	Grading	Grading	11/8/2021	12/31/2021	5	40	
4	Trenching/Foundation	Trenching	11/8/2021	1/28/2022	5	60	
5	Paving	Paving	1/17/2022	2/4/2022	5	15	
6	Building Construction	Building Construction	1/31/2022	5/20/2022	5	80	
7	Architectural Coating	Architectural Coating	1/31/2022	5/20/2022	5	80	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 10

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 249,476; Non-Residential Outdoor: 83,159; Striped Parking Area:

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	0	0.00	81	0.73
Demolition	Excavators	5	8.00	158	0.38
Demolition	Rubber Tired Dozers	0	0.00	247	0.40
Site Preparation	Rubber Tired Dozers	0	0.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	0	0.00	247	0.40
Grading	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	1	2.00	89	0.20
Building Construction	Generator Sets	0	0.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	0	0.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	1	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	0	0.00	78	0.48
Demolition	Skid Steer Loaders	8	8.00	65	0.37
Grading	Crawler Tractors	1	8.00	212	0.43
Grading	Scrapers	2	8.00	367	0.48
Grading	Rollers	1	8.00	80	0.38
Grading	Skid Steer Loaders	1	8.00	65	0.37
Grading	Plate Compactors	1	8.00	8	0.43
Trenching/Foundation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Trenching/Foundation	Excavators	3	8.00	158	0.38
Paving	Skid Steer Loaders	1	8.00	65	0.37
Building Construction	Pumps	1	8.00	84	0.74
Building Construction	Skid Steer Loaders	2	8.00	65	0.37
Building Construction	Aerial Lifts	3	8.00	63	0.31
Building Construction	Pressure Washers	1	8.00	13	0.30

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	13	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	0	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	10	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	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/Foundation	4	0.00	0.00	0.00	10.80	7.30	7.30	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 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					0.3242	0.0000	0.3242	0.0491	0.0000	0.0491	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1005	1.0789	1.5774	2.4300e-003		0.0487	0.0487		0.0448	0.0448	0.0000	213.6630	213.6630	0.0691	0.0000	215.3905
Total	**0.1005**	**1.0789**	**1.5774**	**2.4300e-003**	**0.3242**	**0.0487**	**0.3729**	**0.0491**	**0.0448**	**0.0939**	**0.0000**	**213.6630**	**213.6630**	**0.0691**	**0.0000**	**215.3905**

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					0.1459	0.0000	0.1459	0.0221	0.0000	0.0221	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0416	1.1870	1.8454	2.4300e-003		0.0242	0.0242		0.0242	0.0242	0.0000	213.6627	213.6627	0.0691	0.0000	215.3903
Total	**0.0416**	**1.1870**	**1.8454**	**2.4300e-003**	**0.1459**	**0.0242**	**0.1701**	**0.0221**	**0.0242**	**0.0463**	**0.0000**	**213.6627**	**213.6627**	**0.0691**	**0.0000**	**215.3903**

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 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					0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**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					
Fugitive Dust					0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**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**

3.4 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					5.8100e-003	0.0000	5.8100e-003	6.5000e-004	0.0000	6.5000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0680	0.7938	0.5000	1.1000e-003		0.0311	0.0311		0.0287	0.0287	0.0000	96.8032	96.8032	0.0312	0.0000	97.5825
Total	**0.0680**	**0.7938**	**0.5000**	**1.1000e-003**	**5.8100e-003**	**0.0311**	**0.0370**	**6.5000e-004**	**0.0287**	**0.0293**	**0.0000**	**96.8032**	**96.8032**	**0.0312**	**0.0000**	**97.5825**

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					2.6100e-003	0.0000	2.6100e-003	2.9000e-004	0.0000	2.9000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0182	0.3287	0.6272	1.1000e-003		2.6700e-003	2.6700e-003		2.6700e-003	2.6700e-003	0.0000	96.8031	96.8031	0.0312	0.0000	97.5824
Total	**0.0182**	**0.3287**	**0.6272**	**1.1000e-003**	**2.6100e-003**	**2.6700e-003**	**5.2800e-003**	**2.9000e-004**	**2.6700e-003**	**2.9600e-003**	**0.0000**	**96.8031**	**96.8031**	**0.0312**	**0.0000**	**97.5824**

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 Trenching/Foundation - 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	0.0176	0.1676	0.2423	3.7000e-004		8.5200e-003	8.5200e-003		7.8400e-003	7.8400e-003	0.0000	32.7994	32.7994	0.0106	0.0000	33.0646
Total	**0.0176**	**0.1676**	**0.2423**	**3.7000e-004**		**8.5200e-003**	**8.5200e-003**		**7.8400e-003**	**7.8400e-003**	**0.0000**	**32.7994**	**32.7994**	**0.0106**	**0.0000**	**33.0646**

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	5.2200e-003	0.1643	0.2829	3.7000e-004		6.1000e-004	6.1000e-004		6.1000e-004	6.1000e-004	0.0000	32.7994	32.7994	0.0106	0.0000	33.0646
Total	**5.2200e-003**	**0.1643**	**0.2829**	**3.7000e-004**		**6.1000e-004**	**6.1000e-004**		**6.1000e-004**	**6.1000e-004**	**0.0000**	**32.7994**	**32.7994**	**0.0106**	**0.0000**	**33.0646**

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 Trenching/Foundation - 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	7.7400e-003	0.0703	0.1204	1.9000e-004		3.4900e-003	3.4900e-003		3.2100e-003	3.2100e-003	0.0000	16.3979	16.3979	5.3000e-003	0.0000	16.5305
Total	**7.7400e-003**	**0.0703**	**0.1204**	**1.9000e-004**		**3.4900e-003**	**3.4900e-003**		**3.2100e-003**	**3.2100e-003**	**0.0000**	**16.3979**	**16.3979**	**5.3000e-003**	**0.0000**	**16.5305**

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	2.6100e-003	0.0821	0.1415	1.9000e-004		3.1000e-004	3.1000e-004		3.1000e-004	3.1000e-004	0.0000	16.3979	16.3979	5.3000e-003	0.0000	16.5305
Total	**2.6100e-003**	**0.0821**	**0.1415**	**1.9000e-004**		**3.1000e-004**	**3.1000e-004**		**3.1000e-004**	**3.1000e-004**	**0.0000**	**16.3979**	**16.3979**	**5.3000e-003**	**0.0000**	**16.5305**

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 Paving - 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	7.2400e-003	0.0746	0.0981	1.5000e-004		3.7700e-003	3.7700e-003		3.4700e-003	3.4700e-003	0.0000	13.2811	13.2811	4.3000e-003	0.0000	13.3884
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**7.2400e-003**	**0.0746**	**0.0981**	**1.5000e-004**		**3.7700e-003**	**3.7700e-003**		**3.4700e-003**	**3.4700e-003**	**0.0000**	**13.2811**	**13.2811**	**4.3000e-003**	**0.0000**	**13.3884**

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	2.4500e-003	0.0685	0.1147	1.5000e-004		5.8000e-004	5.8000e-004		5.8000e-004	5.8000e-004	0.0000	13.2810	13.2810	4.3000e-003	0.0000	13.3884
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.4500e-003**	**0.0685**	**0.1147**	**1.5000e-004**		**5.8000e-004**	**5.8000e-004**		**5.8000e-004**	**5.8000e-004**	**0.0000**	**13.2810**	**13.2810**	**4.3000e-003**	**0.0000**	**13.3884**

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 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	0.0509	0.4872	0.5456	9.7000e-004		0.0201	0.0201		0.0192	0.0192	0.0000	82.7269	82.7269	0.0187	0.0000	83.1956
Total	**0.0509**	**0.4872**	**0.5456**	**9.7000e-004**		**0.0201**	**0.0201**		**0.0192**	**0.0192**	**0.0000**	**82.7269**	**82.7269**	**0.0187**	**0.0000**	**83.1956**

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	0.0192	0.4256	0.6184	9.7000e-004		0.0110	0.0110		0.0110	0.0110	0.0000	82.7268	82.7268	0.0187	0.0000	83.1955
Total	**0.0192**	**0.4256**	**0.6184**	**9.7000e-004**		**0.0110**	**0.0110**		**0.0110**	**0.0110**	**0.0000**	**82.7268**	**82.7268**	**0.0187**	**0.0000**	**83.1955**

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**

3.8 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	1.7920					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	**1.7920**	**0.0000**	**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	1.7920					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	**1.7920**	**0.0000**	**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	3.5110	5.0219	19.0844	0.0440	3.7775	0.0403	3.8178	1.0127	0.0378	1.0505	0.0000	4,139.0450	4,139.0450	0.2837	0.0000	4,146.1374
Unmitigated	3.5110	5.0219	19.0844	0.0440	3.7775	0.0403	3.8178	1.0127	0.0378	1.0505	0.0000	4,139.0450	4,139.0450	0.2837	0.0000	4,146.1374

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Discount Club	4,420.38	5,683.61	3560.32	6,898,199	6,898,199
Gasoline/Service Station	5,632.00	5,632.00	5632.00	3,244,980	3,244,980
Parking Lot	0.00	0.00	0.00		
Total	10,052.38	11,315.61	9,192.32	10,143,179	10,143,179

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
Discount Club	9.50	7.30	7.30	16.70	64.30	19.00	45	40	15
Gasoline/Service Station	9.50	7.30	7.30	2.00	79.00	19.00	14	27	59
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
Discount Club	0.559797	0.054313	0.176009	0.106178	0.021091	0.005189	0.023514	0.044634	0.001330	0.001827	0.005113	0.000332	0.000673
Gasoline/Service Station	0.559797	0.054313	0.176009	0.106178	0.021091	0.005189	0.023514	0.044634	0.001330	0.001827	0.005113	0.000332	0.000673
Parking Lot	0.559797	0.054313	0.176009	0.106178	0.021091	0.005189	0.023514	0.044634	0.001330	0.001827	0.005113	0.000332	0.000673

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	173.6415	173.6415	0.0240	4.9600e-003	175.7194
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	173.6415	173.6415	0.0240	4.9600e-003	175.7194
NaturalGas Mitigated	4.6200e-003	0.0420	0.0353	2.5000e-004		3.1900e-003	3.1900e-003		3.1900e-003	3.1900e-003	0.0000	45.6843	45.6843	8.8000e-004	8.4000e-004	45.9557
NaturalGas Unmitigated	4.6200e-003	0.0420	0.0353	2.5000e-004		3.1900e-003	3.1900e-003		3.1900e-003	3.1900e-003	0.0000	45.6843	45.6843	8.8000e-004	8.4000e-004	45.9557

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					
Discount Club	744280	4.0100e-003	0.0365	0.0307	2.2000e-004		2.7700e-003	2.7700e-003		2.7700e-003	2.7700e-003	0.0000	39.7176	39.7176	7.6000e-004	7.3000e-004	39.9536
Gasoline/Service Station	111811	6.0000e-004	5.4800e-003	4.6000e-003	3.0000e-005		4.2000e-004	4.2000e-004		4.2000e-004	4.2000e-004	0.0000	5.9666	5.9666	1.1000e-004	1.1000e-004	6.0021
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		**4.6100e-003**	**0.0420**	**0.0353**	**2.5000e-004**		**3.1900e-003**	**3.1900e-003**		**3.1900e-003**	**3.1900e-003**	**0.0000**	**45.6843**	**45.6843**	**8.7000e-004**	**8.4000e-004**	**45.9557**

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					
Discount Club	744280	4.0100e-003	0.0365	0.0307	2.2000e-004		2.7700e-003	2.7700e-003		2.7700e-003	2.7700e-003	0.0000	39.7176	39.7176	7.6000e-004	7.3000e-004	39.9536
Gasoline/Service Station	111811	6.0000e-004	5.4800e-003	4.6000e-003	3.0000e-005		4.2000e-004	4.2000e-004		4.2000e-004	4.2000e-004	0.0000	5.9666	5.9666	1.1000e-004	1.1000e-004	6.0021
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		**4.6100e-003**	**0.0420**	**0.0353**	**2.5000e-004**		**3.1900e-003**	**3.1900e-003**		**3.1900e-003**	**3.1900e-003**	**0.0000**	**45.6843**	**45.6843**	**8.7000e-004**	**8.4000e-004**	**45.9557**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Discount Club	1.69566e+006	161.5195	0.0223	4.6100e-003	163.4523
Gasoline/Service Station	34153.1	3.2532	4.5000e-004	9.0000e-005	3.2922
Parking Lot	93107	8.8689	1.2200e-003	2.5000e-004	8.9750
Total		**173.6415**	**0.0240**	**4.9500e-003**	**175.7194**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Discount Club	1.69566e+006	161.5195	0.0223	4.6100e-003	163.4523
Gasoline/Service Station	34153.1	3.2532	4.5000e-004	9.0000e-005	3.2922
Parking Lot	93107	8.8689	1.2200e-003	2.5000e-004	8.9750
Total		**173.6415**	**0.0240**	**4.9500e-003**	**175.7194**

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	0.8465	5.0000e-005	5.5000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0107	0.0107	3.0000e-005	0.0000	0.0114
Unmitigated	0.8465	5.0000e-005	5.5000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0107	0.0107	3.0000e-005	0.0000	0.0114

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	0.1792					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.6668					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.1000e-004	5.0000e-005	5.5000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0107	0.0107	3.0000e-005	0.0000	0.0114
Total	**0.8465**	**5.0000e-005**	**5.5000e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0107**	**0.0107**	**3.0000e-005**	**0.0000**	**0.0114**

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	0.1792					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.6668					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.1000e-004	5.0000e-005	5.5000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.0107	0.0107	3.0000e-005	0.0000	0.0114

Total	**0.8465**	**5.0000e-005**	**5.5000e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**0.0107**	**0.0107**	**3.0000e-005**	**0.0000**	**0.0114**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	13.3228	0.0164	9.8000e-003	16.6529
Unmitigated	13.3228	0.0164	9.8000e-003	16.6529

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Discount Club	11.9849 / 7.3456	12.8665	0.0158	9.4700e-003	16.0826
Gasoline/Service Station	0.42502 / 0.260496	0.4563	5.6000e-004	3.4000e-004	0.5703
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**13.3228**	**0.0164**	**9.8100e-003**	**16.6529**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Discount Club	11.9849 / 7.3456	12.8665	0.0158	9.4700e-003	16.0826
Gasoline/Service Station	0.42502 / 0.260496	0.4563	5.6000e-004	3.4000e-004	0.5703
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**13.3228**	**0.0164**	**9.8100e-003**	**16.6529**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	144.7529	8.5547	0.0000	358.6191
Unmitigated	144.7529	8.5547	0.0000	358.6191

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Discount Club	695.85	141.2513	8.3477	0.0000	349.9440
Gasoline/Service Station	17.25	3.5016	0.2069	0.0000	8.6751
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**144.7529**	**8.5547**	**0.0000**	**358.6191**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Discount Club	695.85	141.2513	8.3477	0.0000	349.9440
Gasoline/Service Station	17.25	3.5016	0.2069	0.0000	8.6751
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**144.7529**	**8.5547**	**0.0000**	**358.6191**

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

Newpark Costco - Existing Use Ops

Alameda County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Regional Shopping Center	167.50	1000sqft	3.85	167,500.00	0

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 - PG&E current intensity factor

Land Use - Estimated from Google Earth

Construction Phase - No Construction

Off-road Equipment - No Construction

Grading - No Construction

Demolition -

Trips and VMT - No Construction

Architectural Coating -

Vehicle Trips -

Vehicle Emission Factors - Based on EMFAC2017

Vehicle Emission Factors -

Vehicle Emission Factors -

Area Coating -

Energy Use -

Water And Wastewater - Assume 100% WWTF

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	18.00	0.00
tblConstructionPhase	NumDays	230.00	0.00
tblConstructionPhase	NumDays	20.00	0.00
tblConstructionPhase	NumDays	8.00	0.00
tblConstructionPhase	NumDays	18.00	0.00
tblConstructionPhase	NumDays	5.00	0.00
tblConstructionPhase	PhaseEndDate	7/7/2022	6/13/2022
tblConstructionPhase	PhaseEndDate	5/18/2022	6/30/2021
tblConstructionPhase	PhaseEndDate	6/11/2021	5/14/2021
tblConstructionPhase	PhaseEndDate	6/30/2021	6/18/2021
tblConstructionPhase	PhaseEndDate	6/13/2022	5/18/2022

tblConstructionPhase	PhaseEndDate	6/18/2021	6/11/2021
tblFleetMix	HHD	0.05	0.04
tblFleetMix	LDA	0.56	0.56
tblFleetMix	LDT1	0.04	0.05
tblFleetMix	LDT2	0.19	0.18
tblFleetMix	LHD1	0.02	0.02
tblFleetMix	LHD2	5.1800e-003	5.1892e-003
tblFleetMix	MCY	5.4910e-003	5.1133e-003
tblFleetMix	MDV	0.11	0.11
tblFleetMix	MH	7.0400e-004	6.7318e-004
tblFleetMix	MHD	0.02	0.02
tblFleetMix	OBUS	2.2090e-003	1.3295e-003
tblFleetMix	SBUS	3.3400e-004	3.3176e-004
tblFleetMix	UBUS	2.4560e-003	1.8273e-003
tblProjectCharacteristics	CO2IntensityFactor	641.35	210
tblTripsAndVMT	VendorTripNumber	27.00	0.00
tblTripsAndVMT	WorkerTripNumber	11.00	0.00
tblTripsAndVMT	WorkerTripNumber	54.00	0.00
tblTripsAndVMT	WorkerTripNumber	15.00	0.00
tblTripsAndVMT	WorkerTripNumber	15.00	0.00
tblTripsAndVMT	WorkerTripNumber	20.00	0.00
tblTripsAndVMT	WorkerTripNumber	18.00	0.00
tblVehicleEF	HHD	0.62	0.02
tblVehicleEF	HHD	0.04	0.03
tblVehicleEF	HHD	0.08	0.00
tblVehicleEF	HHD	1.68	6.67
tblVehicleEF	HHD	0.78	0.34
tblVehicleEF	HHD	2.05	4.2510e-003
tblVehicleEF	HHD	4,767.28	1,103.40
tblVehicleEF	HHD	1,547.06	1,394.59
tblVehicleEF	HHD	6.46	0.05
tblVehicleEF	HHD	14.52	5.51
tblVehicleEF	HHD	2.04	2.58
tblVehicleEF	HHD	20.07	2.28
tblVehicleEF	HHD	6.5450e-003	2.4080e-003
tblVehicleEF	HHD	0.06	0.06
tblVehicleEF	HHD	0.04	0.04
tblVehicleEF	HHD	6.1300e-003	0.03
tblVehicleEF	HHD	5.2000e-005	0.00
tblVehicleEF	HHD	6.2620e-003	2.3040e-003
tblVehicleEF	HHD	0.03	0.03
tblVehicleEF	HHD	8.8970e-003	8.9230e-003
tblVehicleEF	HHD	5.8640e-003	0.02
tblVehicleEF	HHD	4.8000e-005	0.00
tblVehicleEF	HHD	4.8000e-005	2.0000e-006
tblVehicleEF	HHD	2.8330e-003	7.7000e-005
tblVehicleEF	HHD	0.44	0.45
tblVehicleEF	HHD	3.3000e-005	1.0000e-006
tblVehicleEF	HHD	0.09	0.02
tblVehicleEF	HHD	2.1500e-004	3.9700e-004

tblVehicleEF	HHD	0.05	1.0000e-006
tblVehicleEF	HHD	0.04	0.01
tblVehicleEF	HHD	0.01	0.01
tblVehicleEF	HHD	9.8000e-005	0.00
tblVehicleEF	HHD	4.8000e-005	2.0000e-006
tblVehicleEF	HHD	2.8330e-003	7.7000e-005
tblVehicleEF	HHD	0.51	0.52
tblVehicleEF	HHD	3.3000e-005	1.0000e-006
tblVehicleEF	HHD	0.14	0.06
tblVehicleEF	HHD	2.1500e-004	3.9700e-004
tblVehicleEF	HHD	0.06	1.0000e-006
tblVehicleEF	LDA	3.8970e-003	2.1170e-003
tblVehicleEF	LDA	5.6840e-003	0.05
tblVehicleEF	LDA	0.53	0.57
tblVehicleEF	LDA	1.25	2.24
tblVehicleEF	LDA	244.94	250.63
tblVehicleEF	LDA	56.21	53.04
tblVehicleEF	LDA	0.05	0.04
tblVehicleEF	LDA	0.07	0.19
tblVehicleEF	LDA	1.7490e-003	1.4470e-003
tblVehicleEF	LDA	2.2460e-003	1.7590e-003
tblVehicleEF	LDA	1.6120e-003	1.3340e-003
tblVehicleEF	LDA	2.0650e-003	1.6170e-003
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.11	0.10
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	9.8450e-003	8.2240e-003
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.08	0.23
tblVehicleEF	LDA	2.4520e-003	2.4480e-003
tblVehicleEF	LDA	5.8300e-004	5.1800e-004
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.11	0.10
tblVehicleEF	LDA	0.03	0.04
tblVehicleEF	LDA	0.01	0.01
tblVehicleEF	LDA	0.04	0.22
tblVehicleEF	LDA	0.08	0.25
tblVehicleEF	LDT1	8.0930e-003	4.2580e-003
tblVehicleEF	LDT1	0.01	0.07
tblVehicleEF	LDT1	0.99	0.93
tblVehicleEF	LDT1	2.67	2.45
tblVehicleEF	LDT1	300.74	299.25
tblVehicleEF	LDT1	69.06	64.04
tblVehicleEF	LDT1	0.10	0.08
tblVehicleEF	LDT1	0.15	0.25
tblVehicleEF	LDT1	2.2930e-003	1.8240e-003
tblVehicleEF	LDT1	3.0800e-003	2.3280e-003
tblVehicleEF	LDT1	2.1120e-003	1.6790e-003
tblVehicleEF	LDT1	2.8320e-003	2.1410e-003
tblVehicleEF	LDT1	0.08	0.08

tblVehicleEF	LDT1	0.24	0.18
tblVehicleEF	LDT1	0.07	0.07
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	0.15	0.65
tblVehicleEF	LDT1	0.18	0.34
tblVehicleEF	LDT1	3.0180e-003	2.9240e-003
tblVehicleEF	LDT1	7.3700e-004	6.2600e-004
tblVehicleEF	LDT1	0.08	0.08
tblVehicleEF	LDT1	0.24	0.18
tblVehicleEF	LDT1	0.07	0.07
tblVehicleEF	LDT1	0.03	0.03
tblVehicleEF	LDT1	0.15	0.65
tblVehicleEF	LDT1	0.19	0.37
tblVehicleEF	LDT2	5.0510e-003	3.2180e-003
tblVehicleEF	LDT2	6.9140e-003	0.07
tblVehicleEF	LDT2	0.66	0.75
tblVehicleEF	LDT2	1.52	2.87
tblVehicleEF	LDT2	339.26	321.40
tblVehicleEF	LDT2	77.68	69.31
tblVehicleEF	LDT2	0.07	0.07
tblVehicleEF	LDT2	0.11	0.28
tblVehicleEF	LDT2	1.7210e-003	1.4410e-003
tblVehicleEF	LDT2	2.3050e-003	1.7620e-003
tblVehicleEF	LDT2	1.5830e-003	1.3260e-003
tblVehicleEF	LDT2	2.1190e-003	1.6200e-003
tblVehicleEF	LDT2	0.04	0.06
tblVehicleEF	LDT2	0.11	0.13
tblVehicleEF	LDT2	0.04	0.06
tblVehicleEF	LDT2	0.01	0.01
tblVehicleEF	LDT2	0.06	0.44
tblVehicleEF	LDT2	0.09	0.32
tblVehicleEF	LDT2	3.3970e-003	3.1400e-003
tblVehicleEF	LDT2	8.0200e-004	6.7700e-004
tblVehicleEF	LDT2	0.04	0.06
tblVehicleEF	LDT2	0.11	0.13
tblVehicleEF	LDT2	0.04	0.06
tblVehicleEF	LDT2	0.02	0.02
tblVehicleEF	LDT2	0.06	0.44
tblVehicleEF	LDT2	0.10	0.35
tblVehicleEF	LHD1	5.4470e-003	5.3750e-003
tblVehicleEF	LHD1	0.02	8.9070e-003
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	0.15	0.19
tblVehicleEF	LHD1	1.08	0.81
tblVehicleEF	LHD1	2.63	1.12
tblVehicleEF	LHD1	9.01	8.94
tblVehicleEF	LHD1	694.94	806.45
tblVehicleEF	LHD1	32.75	12.21
tblVehicleEF	LHD1	0.07	0.06
tblVehicleEF	LHD1	1.26	0.76

tblVehicleEF	LHD1	1.04	0.34
tblVehicleEF	LHD1	8.7000e-004	7.9200e-004
tblVehicleEF	LHD1	0.01	9.6770e-003
tblVehicleEF	LHD1	0.02	0.01
tblVehicleEF	LHD1	9.3800e-004	2.6000e-004
tblVehicleEF	LHD1	8.3200e-004	7.5800e-004
tblVehicleEF	LHD1	2.5100e-003	2.4190e-003
tblVehicleEF	LHD1	0.02	9.8820e-003
tblVehicleEF	LHD1	8.6300e-004	2.3900e-004
tblVehicleEF	LHD1	2.3470e-003	1.8480e-003
tblVehicleEF	LHD1	0.10	0.08
tblVehicleEF	LHD1	0.02	0.02
tblVehicleEF	LHD1	1.3470e-003	1.0560e-003
tblVehicleEF	LHD1	0.12	0.09
tblVehicleEF	LHD1	0.30	0.55
tblVehicleEF	LHD1	0.27	0.08
tblVehicleEF	LHD1	9.0000e-005	8.7000e-005
tblVehicleEF	LHD1	6.8250e-003	7.8810e-003
tblVehicleEF	LHD1	3.7700e-004	1.2100e-004
tblVehicleEF	LHD1	2.3470e-003	1.8480e-003
tblVehicleEF	LHD1	0.10	0.08
tblVehicleEF	LHD1	0.02	0.03
tblVehicleEF	LHD1	1.3470e-003	1.0560e-003
tblVehicleEF	LHD1	0.15	0.12
tblVehicleEF	LHD1	0.30	0.55
tblVehicleEF	LHD1	0.29	0.09
tblVehicleEF	LHD2	3.6270e-003	3.6920e-003
tblVehicleEF	LHD2	8.0300e-003	7.1740e-003
tblVehicleEF	LHD2	7.5680e-003	9.9610e-003
tblVehicleEF	LHD2	0.13	0.15
tblVehicleEF	LHD2	0.58	0.63
tblVehicleEF	LHD2	1.26	0.72
tblVehicleEF	LHD2	13.84	13.61
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tblVehicleEF	LHD2	25.84	9.13
tblVehicleEF	LHD2	0.10	0.09
tblVehicleEF	LHD2	0.78	0.86
tblVehicleEF	LHD2	0.51	0.22
tblVehicleEF	LHD2	1.2000e-003	1.2930e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	4.1700e-004	1.4400e-004
tblVehicleEF	LHD2	1.1480e-003	1.2380e-003
tblVehicleEF	LHD2	2.6730e-003	2.6420e-003
tblVehicleEF	LHD2	0.01	0.01
tblVehicleEF	LHD2	3.8400e-004	1.3200e-004
tblVehicleEF	LHD2	8.1400e-004	1.0880e-003
tblVehicleEF	LHD2	0.03	0.05
tblVehicleEF	LHD2	0.01	0.02
tblVehicleEF	LHD2	4.9300e-004	6.3200e-004

tblVehicleEF	LHD2	0.11	0.11
tblVehicleEF	LHD2	0.07	0.32
tblVehicleEF	LHD2	0.10	0.05
tblVehicleEF	LHD2	1.3500e-004	1.3000e-004
tblVehicleEF	LHD2	6.9560e-003	7.7200e-003
tblVehicleEF	LHD2	2.8100e-004	9.0000e-005
tblVehicleEF	LHD2	8.1400e-004	1.0880e-003
tblVehicleEF	LHD2	0.03	0.05
tblVehicleEF	LHD2	0.02	0.02
tblVehicleEF	LHD2	4.9300e-004	6.3200e-004
tblVehicleEF	LHD2	0.12	0.13
tblVehicleEF	LHD2	0.07	0.32
tblVehicleEF	LHD2	0.11	0.05
tblVehicleEF	MCY	0.46	0.34
tblVehicleEF	MCY	0.17	0.26
tblVehicleEF	MCY	20.03	20.15
tblVehicleEF	MCY	10.24	9.10
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tblVehicleEF	MCY	1.17	1.17
tblVehicleEF	MCY	0.32	0.27
tblVehicleEF	MCY	2.1220e-003	2.0690e-003
tblVehicleEF	MCY	3.9700e-003	3.1980e-003
tblVehicleEF	MCY	1.9850e-003	1.9350e-003
tblVehicleEF	MCY	3.7430e-003	3.0120e-003
tblVehicleEF	MCY	0.81	0.80
tblVehicleEF	MCY	0.74	0.73
tblVehicleEF	MCY	0.50	0.50
tblVehicleEF	MCY	2.33	2.34
tblVehicleEF	MCY	0.60	2.18
tblVehicleEF	MCY	2.26	1.99
tblVehicleEF	MCY	2.1430e-003	2.1320e-003
tblVehicleEF	MCY	6.9300e-004	6.1200e-004
tblVehicleEF	MCY	0.81	0.80
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tblVehicleEF	MCY	0.50	0.50
tblVehicleEF	MCY	2.88	2.89
tblVehicleEF	MCY	0.60	2.18
tblVehicleEF	MCY	2.46	2.17
tblVehicleEF	MDV	9.7550e-003	3.8520e-003
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tblVehicleEF	MDV	1.05	0.83
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tblVehicleEF	MDV	0.13	0.08
tblVehicleEF	MDV	0.25	0.34
tblVehicleEF	MDV	1.8870e-003	1.5680e-003
tblVehicleEF	MDV	2.5190e-003	1.9540e-003
tblVehicleEF	MDV	1.7400e-003	1.4460e-003

tblVehicleEF	MDV	2.3160e-003	1.7970e-003
tblVehicleEF	MDV	0.06	0.07
tblVehicleEF	MDV	0.17	0.14
tblVehicleEF	MDV	0.06	0.07
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	0.10	0.47
tblVehicleEF	MDV	0.22	0.41
tblVehicleEF	MDV	4.5760e-003	3.7760e-003
tblVehicleEF	MDV	1.0790e-003	8.1200e-004
tblVehicleEF	MDV	0.06	0.07
tblVehicleEF	MDV	0.17	0.14
tblVehicleEF	MDV	0.06	0.07
tblVehicleEF	MDV	0.04	0.02
tblVehicleEF	MDV	0.10	0.47
tblVehicleEF	MDV	0.24	0.45
tblVehicleEF	MH	0.03	0.01
tblVehicleEF	MH	0.03	0.02
tblVehicleEF	MH	2.15	1.09
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tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	1.1590e-003	2.7900e-004
tblVehicleEF	MH	3.2120e-003	3.2610e-003
tblVehicleEF	MH	0.02	0.02
tblVehicleEF	MH	1.0660e-003	2.5600e-004
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tblVehicleEF	MH	0.10	0.07
tblVehicleEF	MH	0.02	1.41
tblVehicleEF	MH	0.34	0.10
tblVehicleEF	MH	0.01	0.02
tblVehicleEF	MH	6.9800e-004	1.8800e-004
tblVehicleEF	MH	0.75	0.61
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tblVehicleEF	MH	0.13	0.09
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tblVehicleEF	MHD	1.2900e-004	3.5500e-004
tblVehicleEF	MHD	3.0820e-003	6.8020e-003
tblVehicleEF	MHD	6.6500e-004	8.1000e-005
tblVehicleEF	MHD	1.2300e-004	3.4000e-004
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tblVehicleEF	MHD	6.8000e-004	2.7800e-004
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tblVehicleEF	OBUS	2.6580e-003	6.8520e-003
tblVehicleEF	OBUS	8.5400e-004	1.9300e-004
tblVehicleEF	OBUS	2.0000e-005	1.0200e-004
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tblVehicleEF	OBUS	5.6300e-004	6.8900e-004

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tblVehicleEF	SBUS	0.01	0.02
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tblVehicleEF	SBUS	2.4480e-003	2.6500e-003
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tblVehicleEF	SBUS	1.1870e-003	6.3000e-005
tblVehicleEF	SBUS	2.9140e-003	3.2800e-004
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tblVehicleEF	SBUS	1.3900e-003	1.5600e-004
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tblVehicleEF	SBUS	0.55	0.03
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tblVehicleEF	UBUS	8.7700e-004	6.0000e-006
tblVehicleEF	UBUS	0.28	0.03
tblVehicleEF	UBUS	3.0000e-003	8.5390e-003
tblVehicleEF	UBUS	0.30	5.4020e-003
tblVehicleEF	UBUS	8.0700e-004	6.0000e-006
tblVehicleEF	UBUS	2.2740e-003	4.8000e-005
tblVehicleEF	UBUS	0.05	6.9100e-004
tblVehicleEF	UBUS	1.1250e-003	3.1000e-005
tblVehicleEF	UBUS	0.79	0.01
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tblVehicleEF	UBUS	8.8600e-004	8.0000e-006
tblVehicleEF	UBUS	2.2740e-003	4.8000e-005
tblVehicleEF	UBUS	0.05	6.9100e-004
tblVehicleEF	UBUS	1.1250e-003	3.1000e-005
tblVehicleEF	UBUS	1.12	1.05
tblVehicleEF	UBUS	0.01	4.1210e-003
tblVehicleEF	UBUS	0.61	4.9060e-003
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	SepticTankPercent	10.33	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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2022	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**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

	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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2022	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	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**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		Highest		

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	0.7417	1.0000e-005	1.5400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	2.9900e-003	2.9900e-003	1.0000e-005	0.0000	3.1900e-003
Energy	4.1500e-003	0.0378	0.0317	2.3000e-004		2.8700e-003	2.8700e-003		2.8700e-003	2.8700e-003	0.0000	208.3264	208.3264	0.0239	5.5300e-003	210.5717
Mobile	2.5456	4.7142	17.3002	0.0504	4.5109	0.0444	4.5554	1.2093	0.0417	1.2510	0.0000	4,742.7219	4,742.7219	0.2333	0.0000	4,748.5549
Waste						0.0000	0.0000		0.0000	0.0000	35.7021	0.0000	35.7021	2.1099	0.0000	88.4503
Water						0.0000	0.0000		0.0000	0.0000	4.3897	8.9301	13.3198	0.0163	9.8000e-003	16.6491
Total	**3.2914**	**4.7520**	**17.3335**	**0.0507**	**4.5109**	**0.0473**	**4.5582**	**1.2093**	**0.0446**	**1.2539**	**40.0917**	**4,959.9814**	**5,000.0731**	**2.3835**	**0.0153**	**5,064.2292**

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	0.7417	1.0000e-005	1.5400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	2.9900e-003	2.9900e-003	1.0000e-005	0.0000	3.1900e-003
Energy	4.1500e-003	0.0378	0.0317	2.3000e-004		2.8700e-003	2.8700e-003		2.8700e-003	2.8700e-003	0.0000	208.3264	208.3264	0.0239	5.5300e-003	210.5717
Mobile	2.5456	4.7142	17.3002	0.0504	4.5109	0.0444	4.5554	1.2093	0.0417	1.2510	0.0000	4,742.7219	4,742.7219	0.2333	0.0000	4,748.5549
Waste						0.0000	0.0000		0.0000	0.0000	35.7021	0.0000	35.7021	2.1099	0.0000	88.4503
Water						0.0000	0.0000		0.0000	0.0000	4.3897	8.9301	13.3198	0.0163	9.8000e-003	16.6491
Total	**3.2914**	**4.7520**	**17.3335**	**0.0507**	**4.5109**	**0.0473**	**4.5582**	**1.2093**	**0.0446**	**1.2539**	**40.0917**	**4,959.9814**	**5,000.0731**	**2.3835**	**0.0153**	**5,064.2292**

	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	Demolition	Demolition	5/15/2021	5/14/2021	5	0	
2	Site Preparation	Site Preparation	6/12/2021	6/11/2021	5	0	
3	Grading	Grading	6/19/2021	6/18/2021	5	0	
4	Building Construction	Building Construction	7/1/2021	6/30/2021	5	0	
5	Paving	Paving	5/19/2022	5/18/2022	5	0	
6	Architectural Coating	Architectural Coating	6/14/2022	6/13/2022	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 251,250; Non-Residential Outdoor: 83,750; Striped Parking Area:

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Grading	Excavators	1	8.00	158	0.38
Paving	Pavers	1	8.00	130	0.42
Paving	Rollers	2	6.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Paving	Paving Equipment	2	6.00	132	0.36
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Building Construction	Welders	1	8.00	46	0.45

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
Architectural Coating	1	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Demolition	6	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
Paving	8	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	0.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 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	0.0000	0.0000	0.0000	0.0000	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**

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

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

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

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	0.0000	0.0000	0.0000	0.0000	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 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 Paving - 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	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**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Paving	0.0000	0.0000	0.0000	0.0000	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 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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	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	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**

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	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	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	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 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	2.5456	4.7142	17.3002	0.0504	4.5109	0.0444	4.5554	1.2093	0.0417	1.2510	0.0000	4,742.7219	4,742.7219	0.2333	0.0000	4,748.5549
Unmitigated	2.5456	4.7142	17.3002	0.0504	4.5109	0.0444	4.5554	1.2093	0.0417	1.2510	0.0000	4,742.7219	4,742.7219	0.2333	0.0000	4,748.5549

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Regional Shopping Center	7,152.25	8,369.98	4227.70	12,112,562	12,112,562
Total	7,152.25	8,369.98	4,227.70	12,112,562	12,112,562

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
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00	54	35	11

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Regional Shopping Center	0.559797	0.054313	0.176009	0.106178	0.021091	0.005189	0.023514	0.044634	0.001330	0.001827	0.005113	0.000332	0.000673

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	167.2096	167.2096	0.0231	4.7800e-003	169.2105
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	167.2096	167.2096	0.0231	4.7800e-003	169.2105
NaturalGas Mitigated	4.1500e-003	0.0378	0.0317	2.3000e-004		2.8700e-003	2.8700e-003		2.8700e-003	2.8700e-003	0.0000	41.1168	41.1168	7.9000e-004	7.5000e-004	41.3612
NaturalGas Unmitigated	4.1500e-003	0.0378	0.0317	2.3000e-004		2.8700e-003	2.8700e-003		2.8700e-003	2.8700e-003	0.0000	41.1168	41.1168	7.9000e-004	7.5000e-004	41.3612

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					
Regional Shopping Center	770500	4.1500e-003	0.0378	0.0317	2.3000e-004		2.8700e-003	2.8700e-003		2.8700e-003	2.8700e-003	0.0000	41.1168	41.1168	7.9000e-004	7.5000e-004	41.3612
Total		**4.1500e-003**	**0.0378**	**0.0317**	**2.3000e-004**		**2.8700e-003**	**2.8700e-003**		**2.8700e-003**	**2.8700e-003**	**0.0000**	**41.1168**	**41.1168**	**7.9000e-004**	**7.5000e-004**	**41.3612**

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					
Regional Shopping Center	770500	4.1500e-003	0.0378	0.0317	2.3000e-004		2.8700e-003	2.8700e-003		2.8700e-003	2.8700e-003	0.0000	41.1168	41.1168	7.9000e-004	7.5000e-004	41.3612
Total		**4.1500e-003**	**0.0378**	**0.0317**	**2.3000e-004**		**2.8700e-003**	**2.8700e-003**		**2.8700e-003**	**2.8700e-003**	**0.0000**	**41.1168**	**41.1168**	**7.9000e-004**	**7.5000e-004**	**41.3612**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Regional Shopping Center	1.7554e+006	167.2096	0.0231	4.7800e-003	169.2105
Total		**167.2096**	**0.0231**	**4.7800e-003**	**169.2105**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Regional Shopping Center	1.7554e+006	167.2096	0.0231	4.7800e-003	169.2105
Total		**167.2096**	**0.0231**	**4.7800e-003**	**169.2105**

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	0.7417	1.0000e-005	1.5400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	2.9900e-003	2.9900e-003	1.0000e-005	0.0000	3.1900e-003
Unmitigated	0.7417	1.0000e-005	1.5400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	2.9900e-003	2.9900e-003	1.0000e-005	0.0000	3.1900e-003

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	0.0873					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.6542					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.4000e-004	1.0000e-005	1.5400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	2.9900e-003	2.9900e-003	1.0000e-005	0.0000	3.1900e-003
Total	**0.7417**	**1.0000e-005**	**1.5400e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**2.9900e-003**	**2.9900e-003**	**1.0000e-005**	**0.0000**	**3.1900e-003**

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	0.0873					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.6542					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.4000e-004	1.0000e-005	1.5400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	2.9900e-003	2.9900e-003	1.0000e-005	0.0000	3.1900e-003
Total	**0.7417**	**1.0000e-005**	**1.5400e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**2.9900e-003**	**2.9900e-003**	**1.0000e-005**	**0.0000**	**3.1900e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			

Mitigated	13.3198	0.0163	9.8000e-003	16.6491
Unmitigated	13.3198	0.0163	9.8000e-003	16.6491

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Regional Shopping Center	12.4071 / 7.60438	13.3198	0.0163	9.8000e-003	16.6491
Total		**13.3198**	**0.0163**	**9.8000e-003**	**16.6491**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Regional Shopping Center	12.4071 / 7.60438	13.3198	0.0163	9.8000e-003	16.6491
Total		**13.3198**	**0.0163**	**9.8000e-003**	**16.6491**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	35.7021	2.1099	0.0000	88.4503
Unmitigated	35.7021	2.1099	0.0000	88.4503

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e

Land Use	tons	MT/yr			
Regional Shopping Center	175.88	35.7021	2.1099	0.0000	88.4503
Total		**35.7021**	**2.1099**	**0.0000**	**88.4503**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Regional Shopping Center	175.88	35.7021	2.1099	0.0000	88.4503
Total		**35.7021**	**2.1099**	**0.0000**	**88.4503**

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

Gasoline Station Calculator

25,500,000 gallons/year

BAAQMD Evaluation

Controlled Rate (for all activities) = 0.516 lbs/10^3 gal throughput

Estimated Project Throughput	25,500	10^3 gal/year		
Annual Precursor Organic Compound Emissions	13,158	pounds/year	36.6	pounds/day
	6.58	tons/year		

Attachment 3: EMFAC2017 Calculations

CalEEMod EMFAC2017 Emission Factors Input - 2021

Season	EmissionType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
A	CH4_IDLEX	0	0	0	0	0.005722	0.004024	0.002822	0.024184406	0.00899	0	0	0.054324	0
A	CH4_RUNEX	0.002806	0.005748	0.004003	0.005251	0.010684	0.008349	0.00895	0.033632547	0.01436	0.952386	0.348085	0.004704	0.014241
A	CH4_STREX	0.059853	0.083396	0.079197	0.097887	0.017887	0.011765	0.007705	2.24757E-07	0.023862	0.001059	0.263285	0.004856	0.025296
A	CO_IDLEX	0	0	0	0	0.191613	0.153169	0.345577	5.942869478	0.566858	0	0	2.323262	0
A	CO_RUNEX	0.670314	1.166357	0.880382	1.04835	0.966941	0.734312	0.636909	0.605049164	1.322616	6.737308	21.00411	0.370803	1.632647
A	CO_STREX	2.386798	2.632751	3.063372	3.660818	1.206645	0.813381	0.943106	0.004619985	2.675651	0.073772	9.041339	0.711077	2.424811
A	CO2_NBIO_IDLEX	0	0	0	0	9.062289	13.70366	77.34988	1132.467657	87.89434	0	0	340.2848	0
A	CO2_NBIO_RUNEX	263.5561	313.1734	341.5076	411.7881	835.8835	830.3732	1127.39	1503.577176	1544.168	1660.971	215.7768	1027.747	1592.374
A	CO2_NBIO_STREX	55.67617	67.04815	73.50823	88.62509	12.79068	9.844716	7.363595	0.054232039	20.49266	0.856979	62.55906	4.036128	20.17583
A	NOX_IDLEX	0	0	0	0	0.059776	0.095503	0.650102	6.040461239	0.557664	0	0	3.070764	0
A	NOX_RUNEX	0.046608	0.106602	0.084981	0.111787	0.945082	1.090663	2.691856	3.917958872	2.166126	1.420715	1.174932	4.062381	1.403128
A	NOX_STREX	0.215875	0.295329	0.336423	0.420922	0.373089	0.249555	1.282706	1.829331227	0.629428	0.009013	0.273434	1.051074	0.254526
A	PM10_IDLEX	0	0	0	0	0.000757	0.001243	0.001902	0.008625938	0.002236	0	0	0.003407	0
A	PM10_PMBW	0.03675	0.03675	0.03675	0.03675	0.07644	0.08918	0.13034	0.061193763	0.13034	0.079073	0.01176	0.7448	0.13034
A	PM10_PMTW	0.008	0.008	0.008	0.008	0.00959	0.010476	0.012	0.035672845	0.012	0.034461	0.004	0.010803	0.012993
A	PM10_RUNEX	0.001602	0.002118	0.001546	0.001744	0.011651	0.015934	0.066407	0.058527433	0.045809	0.005928	0.002004	0.024092	0.024807
A	PM10_STREX	0.001915	0.00267	0.00188	0.002195	0.000286	0.000165	8.72E-05	4.53238E-07	0.000193	5.39E-06	0.003453	5.23E-05	0.000318
A	PM25_IDLEX	0	0	0	0	0.000724	0.001189	0.001819	0.008252783	0.002139	0	0	0.003259	0
A	PM25_PMBW	0.01575	0.01575	0.01575	0.01575	0.03276	0.03822	0.05586	0.026225899	0.05586	0.033888	0.00504	0.3192	0.05586
A	PM25_PMTW	0.002	0.002	0.002	0.002	0.002397	0.002619	0.003	0.008918211	0.003	0.008615	0.001	0.002701	0.003248
A	PM25_RUNEX	0.001477	0.00195	0.001423	0.001609	0.011095	0.015214	0.06353	0.055995549	0.043808	0.005672	0.001878	0.023034	0.023681
A	PM25_STREX	0.001761	0.002456	0.001729	0.00202	0.000263	0.000152	8.02E-05	4.16736E-07	0.000177	4.95E-06	0.003261	4.81E-05	0.000292
A	ROG_DIURN	0.044817	0.097772	0.060284	0.071807	0.002047	0.001257	0.000319	2.16906E-06	0.001441	4.18E-05	1.621247	0.000251	0.752244
A	ROG_HTSK	0.115333	0.209756	0.136783	0.158596	0.084787	0.054216	0.01655	0.000108677	0.022556	0.000606	0.758054	0.002544	0.070689
A	ROG_IDLEX	0	0	0	0	0.02328	0.018569	0.018465	0.458136658	0.060554	0	0	0.249396	0
A	ROG_RESTL	0.043128	0.085215	0.062166	0.074806	0.001142	0.000701	0.000179	1.40113E-06	0.000667	2.7E-05	1.015093	0.000119	0.282858
A	ROG_RUNEX	0.011372	0.025333	0.01641	0.02367	0.10368	0.114325	0.166644	0.129792008	0.158417	0.013733	2.390978	0.064778	0.085219
A	ROG_RUNLS	0.236886	0.762224	0.462387	0.506269	0.605995	0.379104	0.097183	0.000680696	0.255578	0.003604	2.375005	0.016709	1.74594
A	ROG_STREX	0.279566	0.425292	0.376737	0.500557	0.090323	0.059116	0.042136	1.17613E-06	0.124483	0.004602	2.022377	0.026957	0.109122
A	SO2_IDLEX	0	0	0	0	8.81E-05	0.000131	0.000733	0.010609806	0.000837	0	0	0.003239	0
A	SO2_RUNEX	8.72E-05	0.00241	0.010721	0.004062	0.008174	0.008047	0.010721	0.013963468	0.014998	0.013105	0.002135	0.009822	0.015645
A	SO2_STREX	0	0	7.29E-05	0.000875	0.000127	9.74E-05	7.29E-05	5.3667E-07	0.000203	8.48E-06	0.000619	3.99E-05	0.0002
A	TOG_DIURN	0.044817	0.097772	0.060284	0.071807	0.002047	0.001257	0.000319	2.16906E-06	0.001441	4.18E-05	1.621247	0.000251	0.752244
A	TOG_HTSK	0.115333	0.209756	0.136783	0.158596	0.084787	0.054216	0.01655	0.000108677	0.022556	0.000606	0.758054	0.002544	0.070689
A	TOG_IDLEX	0	0	0	0	0.033034	0.025558	0.023992	0.524475361	0.077942	0	0	0.356913	0
A	TOG_RESTL	0.043128	0.085215	0.062166	0.074806	0.001142	0.000701	0.000179	1.40113E-06	0.000667	2.7E-05	1.015093	0.000119	0.282858
A	TOG_RUNEX	0.016516	0.036914	0.023899	0.033564	0.130063	0.135865	0.192194	0.175564869	0.194351	0.972124	2.932998	0.077041	0.115734
A	TOG_RUNLS	0.236886	0.762224	0.462387	0.506269	0.605995	0.379104	0.097183	0.000680696	0.255578	0.003604	2.375005	0.016709	1.74594
A	TOG_STREX	0.306088	0.465638	0.412478	0.547993	0.098892	0.064724	0.046134	1.28772E-06	0.136294	0.005039	2.200103	0.029515	0.119475

CalEEMod EMFAC2017 Fleet Mix Input - 2021

FleetMixLandUseSubType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
	0.557924	0.054319	0.178855	0.106609	0.021376	0.005087	0.022741	0.043294	0.001369	0.001866	0.005581	0.00031	0.00067

CalEEMod Construction Inputs

Phase	CalEEMod WORKER TRIPS	CalEEMod VENDOR TRIPS	Total Worker Trips	Total Vendor Trips	CalEEMod HAULING TRIPS	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class	*Worker VMT*	*Vendor VMT*	*Hauling VMT*
Demolition	33	0	3795	0	2996	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	40986	0	59920
Site Preparation	0	0	0	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	0	0	0
Grading	20	0	800	0	1112	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	8640	0	22240
Trenching/Foundation	10	0	600	0	200	10.8	7.3	7.3	LD_Mix	HDT_Mix	HHDT	6480	0	1460
Paving	15	0	225	0	660	10.8	7.3	7.3	LD_Mix	HDT_Mix	HHDT	2430	0	4818
Building Construction	165	71	13200	5680	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	142560	41464	0
Architectural Coating	33	0	2640	0	0	10.8	7.3	20	LD_Mix	HDT_Mix	HHDT	28512	0	0

Number of Days Per Year					
2021	5/31/21	12/31/21	215	154	
2022	1/1/22	5/20/22	140	100	
			355	**255**	***Total Workdays***

Phase	Start Date	End Date	Days/Week	Workdays
Demolition	5/31/2021	11/5/2021	5	115
Site Preparation	10/11/2021	11/5/2021	5	20
Grading	11/8/2021	12/31/2021	5	40
Trenching/Foundation	11/8/2021	1/28/2022	5	60
Paving	1/17/2022	2/4/2022	5	15
Building Construction	1/31/2022	5/20/2022	5	80
Architectural Coating	1/31/2022	5/20/2022	5	80

Summary of Construction Traffic Emissions (EMFAC2017)

CATEGORY	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	NBio- CO2
						Grams					
Hauling	13758.51	385593.58	83056.466	1287.613	26442.96	13785.59	40228.6	3978.83	8101.21	12080.04	138599727
Vendor	7958.93	178033.97	50211.6	573.764	12397.74	7241.11	19638.8	1865.47	4259.70	6125.16	61355862.66
Worker	21470.21	18924.38	226988.9	608.985	68652.79	10689.70	79342.5	10330.06	4457.69	14787.75	66629329.71
Total (g)	43187.66	582551.9231	360256.98	2470.362699	107493.49	31716.40219	139209.89	16174.3549	16818.59568	32992.95058	266584919.4
Total (lbs)	95.21	1284.31	794.23	5.45	236.98	69.9	306.91	35.66	37.08	72.74	587719.144
Total (tons)	0.0476	0.642	0.397	0.003	0.118	0.0350	0.1535	0.0178	0.019	0.036	293.86
Total (MT)											266.58

YEAR											
						Tons					
	2021	0.0288	0.3889	0.2405	0.0016	0.0718	0.0212	0.0929	0.0108	0.0112	0.0220	161.4528
	2022	0.0188	0.2532	0.1566	0.0011	0.0467	0.0138	0.0605	0.0070	0.0073	0.0143	105.1321

Summary of Construction Traffic Emissions (EMFAC2017)

CATEGORY	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	NBio- CO2
						Grams					
Hauling	2924.77	58561.55	32553.012	122.083	1485.43	814.85	2300.3	223.51	493.78	717.29	13096140.15
Vendor	2860.32	52943.10	28167.9	114.058	1698.32	1023.01	2721.3	255.54	613.25	868.79	12187642.92
Worker	18663.89	6547.82	70339.0	56.705	6356.74	1027.58	7384.3	956.49	447.50	1403.99	7336296.149
Total (g)	24448.98	118052.4719	131059.94	292.8460094	9540.492	2865.446249	12405.938	1435.54092	1554.533855	2990.074775	32620079.22
Total (lbs)	53.90	260.26	288.94	0.65	21.03	6.3	27.35	3.16	3.43	6.59	71914.96458
Total (tons)	0.0270	0.130	0.144	0.000	0.011	0.0032	0.0137	0.0016	0.002	0.003	35.96
Total (MT)											32.62

YEAR											
						Tons					
	2021	0.0163	0.0788	0.0875	0.0002	0.0064	0.0019	0.0083	0.0010	0.0010	0.0020	19.7558
	2022	0.0106	0.0513	0.0570	0.0001	0.0041	0.0012	0.0054	0.0006	0.0007	0.0013	12.8643

CalEEMod EMFAC2017 Emission Factors Input - 2023

Season	EmissionType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
A	CH4_IDLEX	0	0	0	0	0.005375	0.003692	0.002738	0.02398381	0.008473	0	0	0.067602	0
A	CH4_RUNEX	0.002117	0.004258	0.003218	0.003852	0.008907	0.007174	0.001503	0.029542244	0.007281	1.029364	0.343224	0.0044	0.010596
A	CH4_STREX	0.050683	0.069206	0.068881	0.08177	0.015495	0.009961	0.007196	2.24586E-07	0.022857	0.00103	0.260093	0.00583	0.023617
A	CO_IDLEX	0	0	0	0	0.188209	0.148793	0.355516	6.665948379	0.575664	0	0	2.774459	0
A	CO_RUNEX	0.566457	0.926183	0.752727	0.825068	0.80591	0.631191	0.216115	0.340961841	0.811719	7.447666	20.14792	0.348142	1.089598
A	CO_STREX	2.244836	2.446578	2.868053	3.26323	1.11648	0.722619	0.845097	0.004251165	2.543506	0.073071	9.100498	0.847597	2.172814
A	CO2_NBIO_IDLEX	0	0	0	0	8.941807	13.60575	73.91886	1103.404965	82.9545	0	0	342.9509	0
A	CO2_NBIO_RUNEX	250.6267	299.2453	321.3975	386.7792	806.4517	797.4313	1059.434	1394.591519	1469.455	1639.894	215.4071	997.5632	1537.972
A	CO2_NBIO_STREX	53.03889	64.04255	69.30679	83.08057	12.20749	9.133668	7.098567	0.04715888	19.88495	0.838592	61.82542	4.892419	19.02027
A	NOX_IDLEX	0	0	0	0	0.056843	0.089324	0.42933	5.512618213	0.315398	0	0	2.878423	0
A	NOX_RUNEX	0.035433	0.079034	0.065322	0.080256	0.755403	0.861453	1.427372	2.577216562	1.232426	1.117943	1.167689	3.57191	1.266127
A	NOX_STREX	0.187635	0.251683	0.282571	0.34311	0.34069	0.22324	1.81311	2.278603245	0.803598	0.008775	0.273696	1.108368	0.250601
A	PM10_IDLEX	0	0	0	0	0.000792	0.001293	0.000355	0.002407843	0.000106	0	0	0.002975	0
A	PM10_PMBW	0.03675	0.03675	0.03675	0.03675	0.07644	0.08918	0.13034	0.06122595	0.13034	0.078549	0.01176	0.7448	0.13034
A	PM10_PMTW	0.008	0.008	0.008	0.008	0.009677	0.010568	0.012	0.035692608	0.012	0.034155	0.004	0.010599	0.013044
A	PM10_RUNEX	0.001447	0.001824	0.001441	0.001568	0.010381	0.014914	0.006802	0.025154892	0.006852	0.005647	0.002069	0.021629	0.021842
A	PM10_STREX	0.001759	0.002328	0.001762	0.001954	0.00026	0.000144	8.12E-05	2.80141E-07	0.000193	6.37E-06	0.003198	6.87E-05	0.000279
A	PM25_IDLEX	0	0	0	0	0.000758	0.001238	0.00034	0.002303681	0.000102	0	0	0.002846	0
A	PM25_PMBW	0.01575	0.01575	0.01575	0.01575	0.03276	0.03822	0.05586	0.026239693	0.05586	0.033664	0.00504	0.3192	0.05586
A	PM25_PMTW	0.002	0.002	0.002	0.002	0.002419	0.002642	0.003	0.008923152	0.003	0.008539	0.001	0.00265	0.003261
A	PM25_RUNEX	0.001334	0.001679	0.001326	0.001446	0.009882	0.014241	0.006503	0.02406669	0.006537	0.005402	0.001935	0.020675	0.020851
A	PM25_STREX	0.001617	0.002141	0.00162	0.001797	0.000239	0.000132	7.47E-05	2.57579E-07	0.000178	5.85E-06	0.003012	6.31E-05	0.000256
A	ROG_DIURN	0.037912	0.08216	0.056893	0.066109	0.001848	0.001088	0.000278	1.51045E-06	0.001459	4.77E-05	0.803337	0.000328	0.606781
A	ROG_HTSK	0.100381	0.178657	0.125909	0.143082	0.07721	0.047457	0.014968	7.71423E-05	0.023204	0.000691	0.725491	0.003232	0.057755
A	ROG_IDLEX	0	0	0	0	0.021913	0.0174	0.015243	0.45039374	0.050284	0	0	0.30559	0
A	ROG_RESTL	0.037431	0.073956	0.060021	0.07042	0.001056	0.000632	0.000163	1.00477E-06	0.000689	3.13E-05	0.49757	0.000156	0.235544
A	ROG_RUNEX	0.008224	0.018307	0.012899	0.016178	0.093704	0.107183	0.014933	0.024113692	0.040521	0.014831	2.337556	0.059041	0.066403
A	ROG_RUNLS	0.21721	0.654825	0.439181	0.467694	0.552774	0.315744	0.085405	0.000396639	0.267273	0.004121	2.181255	0.021299	1.41122
A	ROG_STREX	0.228651	0.341927	0.320588	0.406968	0.077812	0.049587	0.038303	1.17378E-06	0.118841	0.00448	1.99341	0.032327	0.09814
A	SO2_IDLEX	0	0	0	0	8.68E-05	0.00013	0.000701	0.010331014	0.00079	0	0	0.00327	0
A	SO2_RUNEX	0.002448	0.002924	0.00314	0.003776	0.007881	0.00772	0.010074	0.012924952	0.014254	0.012626	0.002132	0.009553	0.015104
A	SO2_STREX	0.000518	0.000626	0.000677	0.000812	0.000121	9.04E-05	7.02E-05	4.66675E-07	0.000197	8.3E-06	0.000612	4.84E-05	0.000188
A	TOG_DIURN	0.037912	0.08216	0.056893	0.066109	0.001848	0.001088	0.000278	1.51045E-06	0.001459	4.77E-05	0.803337	0.000328	0.606781
A	TOG_HTSK	0.100381	0.178657	0.125909	0.143082	0.07721	0.047457	0.014968	7.71423E-05	0.023204	0.000691	0.725491	0.003232	0.057755
A	TOG_IDLEX	0	0	0	0	0.030982	0.02378	0.020352	0.515820072	0.066167	0	0	0.439175	0
A	TOG_RESTL	0.037431	0.073956	0.060021	0.07042	0.001056	0.000632	0.000163	1.00477E-06	0.000689	3.13E-05	0.49757	0.000156	0.235544
A	TOG_RUNEX	0.011942	0.026693	0.018783	0.023485	0.115818	0.125984	0.018615	0.056064893	0.056886	1.050683	2.887399	0.070399	0.088466
A	TOG_RUNLS	0.21721	0.654825	0.439181	0.467694	0.552774	0.315744	0.085405	0.000396639	0.267273	0.004121	2.181255	0.021299	1.41122
A	TOG_STREX	0.250344	0.374366	0.351003	0.445575	0.085194	0.054291	0.041937	1.28514E-06	0.130116	0.004906	2.169162	0.035394	0.107451

CalEEMod EMFAC2017 Fleet Mix Input - 2023

FleetMixLandUseSubType	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
	0.559797	0.054313	0.176009	0.106178	0.021091	0.005189	0.023514	0.044634	0.00133	0.001827	0.005113	0.000332	0.000673

Attachment 4: Construction Health Risk Calculations

Newpark Costco Project

DPM Emissions and Modeling Emission Rates - Without Controls

Construction Year	Activity	Area Source	DPM Emissions (ton/year)	DPM Emissions (lb/yr)	DPM Emissions (lb/hr)	DPM Emissions (g/s)	Modeled Area (m^2)	DPM Emission Rate ($g/s/m^2$)
2021	Construction	DPM_CONST	0.0903	180.6	0.10663	1.34E-02	48679.4	2.76E-07
2022	Construction	DPM_CONST	0.0285	57.1	0.0519	0.0065	48679.4	1.343E-07
		Construction Hours						
		hr/day =	11	(7am - 6pm)				
		days/yr =	Varies					
		hours/year =	Varies					

Newpark Costco Project

PM2.5 Fugitive Dust Emissions for Modeling - Without 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	Construction	PM25_CONST	0.0507	101.3	0.05981	7.54E-03	48679.4	1.55E-07
2022	Construction	PM25_CONST	0.0006	1.2	0.0011	0.000143	48679.4	2.94E-09
		Construction Hours						
		hr/day =	11		(7am - 6pm)			
		days/yr =	Varies					
		hours/year =	Varies					

Newpark Costco Project , Newark - Construction Impacts - Without Mitigation
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction
Impacts at Off-Site Single Family Homes - 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 Cancer Risk (per million)	Adult - Exposure Information			Adult Cancer Risk (per million)		Maximum	
			DPM Conc (ug/m3)		Age		Modeled DPM Conc (ug/m3)		Age				
Exposure Year	**Exposure Duration (years)**	**Age**	**Year**	**Annual**	**Sensitivity Factor**		**Year**	**Annual**	**Sensitivity Factor**		**HI**	**Fugitive PM2.5**	**Total PM2.5**
0	0.25	-0.25 - 0*	2021	0.0431	10	0.59							
1	0.4	0 - 1	2021	0.0431	10	2.99	2021	0.0431	1	0.12	0.009	0.0245	0.068
2	0.3	1 - 2	2022	0.0210	10	0.94	2022	0.0210	1	0.06	0.004	0.0005	0.021
3	1	2 - 3	2023	0.0000	3	0.00	2023	0.0000	1	0.00			
4	1	3 - 4	2024	0.0000	3	0.00	2024	0.0000	1	0.00			
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						**4.52**				**0.18**			

* Third trimester of pregnancy

Newpark Residential Project, Newark - Cumulative (Phase A w/ Costco) Construction Impacts - Without Mitigation
Maximum DPM Cancer Risk and PM2.5 Calculations From Construction at Costco MEI
Impacts at Off-Site Single Family Homes - 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					Adult - Exposure Information					Maximum	
			DPM Conc (ug/m3)		Age	Infant/Child	Modeled DPM Conc (ug/m3)		Age	Adult			
Exposure Year	**Exposure Duration (years)**	**Age**	**Year**	**Annual**	**Sensitivity Factor**	**Cancer Risk (per million)**	**Year**	**Annual**	**Sensitivity Factor**	**Cancer Risk (per million)**	**HI**	**Fugitive PM2.5**	**Total PM2.5**
0	0.25	-0.25 - 0*	2021	0.0494	10	0.67							
1	1	0 - 1	2021	0.0494	10	3.86	2021	0.0494	1	0.14	0.010	0.0334	0.083
2	1	1 - 2	2022	0.0251	10	1.70	2022	0.0251	1	0.07	0.005	0.0020	0.027
3	1	2 - 3	2023	0.0030	3	0.08	2023	0.0030	1	0.01	0.001	0.0001	0.003
4	1	3 - 4	2024	0.0000	3	0.00	2024	0.0000	1	0.00			
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						**6.3**				**0.22**			

* Third trimester of pregnancy

Attachment 5: Cumulative Community Risk

Road Link	Description	Direction	No. Lanes	Link Length (miles)	Link Width (ft)	Link Width (m)	Release Height (ft)	Release Height (m)	Initial Vertical Dimention (m)	Initial Vertical Dispersion (m)	Average Speed (mph)	Average Vehicles per Day
NB_880_DPM	Northbound I-880 DPM	N	4	0.44	48	14.63	11.15	3.4	6.8	3.16	65mph off peak, 60mph AM &Mid-day, 55mph evening pe	99,877
SB_880_DPM	Southbound I-880 DPM	S	4	0.45	48	14.63	11.15	3.4	6.8	3.16	65mph off peak, 45-30mph AM, 60mph PM	117,247
NB_880_XXX	Northbound I-880 XXX	N	4	0.44	48	14.63	4.27	1.3	2.86	1.33	65mph off peak, 60mph AM &Mid-day, 55mph evening pe	99,877
SB_880_XXX	Southbound I-880 XXX	S	4	0.45	48	14.63	4.27	1.3	2.86	1.33	65mph off peak, 45-30mph AM, 60mph PM	117,247
ALPNR_DPM	Alpenrose DPM	Both	5	0.06	60	18.29	11.15	3.4	6.8	3.16	25mph	10,020
ALPNR_XXX	Alpenrose XXX	Both	5	0.06	60	18.29	4.27	1.3	2.86	1.33	25mph	10,020
BALNT_DPM	Balentine Drive DPM	Both	5	0.09	60	18.29	11.15	3.4	6.8	3.16	35mph	11,855
BALNT_XXX	Balintine Drive XXX	Both	5	0.09	60	18.29	4.27	1.3	2.86	1.33	35mph	11,855

Emission Factors

	Speed Category	1	2	3	4	5	6	7
	Travel Speed (mph)	25	30	35	45	55	60	65
Emisions per vehicle (g/VMT)	DPM	0.00068	0.00115	0.00062	0.001296	0.001708	0.001956	0.002199
	PM2.5	0.00257	0.00255	0.00182	0.002196	0.002577	0.00289	0.003267
	TOG Exhaust	0.04924	0.0387	0.03294	0.026297	0.025917	0.027749	0.031265
	TOG Evap	0.05983	0.04986	0.04273	0.03324	0.0271961	0.02493	0.023012

		Freeway	Major/Collector
	Fugitive PM2.5	0.028782	0.03441

		I-880		**Aplenrose**		**Balentine**			
Vehicle Type	Truck 1 (MDT)	3,908		80		213		0	
	Truck 2 (HDT)	9,771		220		533		0	
	Non-Truck	203,445		9,719		11,108		0	
Total	2023 ADT		217,124	10,020		11,855			-
	Directional Volume	**117,247**	**99,877**	**5,010**	**5,010**	**5928**	**5928**	**0**	**0**
	Average Veh/Hour/Dir	4,885	4,162	209	209	247	247	0	0

2022 Hourly Traffic Volumes and DPM Emisssions - Northbound I-880 DPM

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.0151052	1,509	0.000402	8	0.0476477	4759	0.001267094	16	0.06162429	6155	0.001272863
1	0.00900878	900	0.0002396	9	0.0477888	4773	0.001130413	17	0.06210403	6203	0.001282772
2	0.00741453	741	0.0001972	10	0.0487631	4870	0.00115346	18	0.06151583	6144	0.001270623
3	0.00708469	708	0.0001884	11	0.0510602	5100	0.001207795	19	0.05935378	5928	0.001403974
4	0.01162576	1161	0.0003092	12	0.0560025	5593	0.001324703	20	0.05235006	5229	0.001392145
5	0.0250506	2502	0.0006662	13	0.0604575	6038	0.001430082	21	0.0456266	4557	0.001213348
6	0.03832036	3827	0.0010191	14	0.0654242	6534	0.001547566	22	0.03517795	3513	0.000935487
7	0.04428031	4423	0.0011775	15	0.0630988	6302	0.00130332	23	0.02411437	2408	0.000641273
									TOTAL	99,877	

2022 Hourly Traffic Volumes and DPM Emisssions - Southbound I-880 DPM

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.01379141	1617	0.0004397	8	0.051724	6064	0.000859374	16	0.05698481	6681	0.001615972
1	0.01022633	1199	0.000326	9	0.0569846	6681	0.000946777	17	0.05706026	6690	0.001618111
2	0.00913437	1071	0.0002912	10	0.0598218	7014	0.00112401	18	0.0534551	6267	0.001515876
3	0.01076179	1262	0.0003431	11	0.0581738	6821	0.001440527	19	0.04833611	5667	0.001541
4	0.02341202	2745	0.0007464	12	0.0569301	6675	0.001614421	20	0.03806259	4463	0.001213471
5	0.04138471	4852	0.0013194	13	0.058185	6822	0.001650006	21	0.03352764	3931	0.001068892
6	0.04805434	5634	0.0009029	14	0.0605164	7095	0.001716119	22	0.02836342	3326	0.000904252
7	0.04899043	5744	0.000814	15	0.0559705	6562	0.001587207	23	0.02014857	2362	0.000642355
									TOTAL	117,247	

2022 Hourly Traffic Volumes and DPM Emisssions - Alpenrose DPM

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.0127045	127	0.000002	8	0.0431635	432	5.21837E-06	16	0.06296341	631	7.61214E-06
1	0.00783481	79	9.472E-07	9	0.0516323	517	6.24223E-06	17	0.06380157	639	7.71347E-06
2	0.00714188	72	8.634E-07	10	0.0600675	602	7.26203E-06	18	0.0629427	631	7.60963E-06
3	0.00761078	76	9.201E-07	11	0.0622381	624	7.52445E-06	19	0.05794997	581	7.00602E-06
4	0.01197959	120	1.448E-06	12	0.0670411	672	8.10512E-06	20	0.04668288	468	5.64386E-06
5	0.02015171	202	2.436E-06	13	0.0694199	696	8.39271E-06	21	0.03910102	392	4.72723E-06
6	0.02781454	279	3.363E-06	14	0.0695133	697	8.404E-06	22	0.02837249	284	3.43017E-06
7	0.036048	361	4.358E-06	15	0.0641538	643	7.75605E-06	23	0.01967073	197	2.37815E-06
									TOTAL	10,020	

2022 Hourly Traffic Volumes and DPM Emisssions - Balentine Drive DPM

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.0127045	151	0.000002	8	0.0431635	512	7.86168E-06	16	0.06296341	746	1.1468E-05
1	0.00783481	93	1.427E-06	9	0.0516323	612	9.40416E-06	17	0.06380157	756	1.16206E-05
2	0.00714188	85	1.301E-06	10	0.0600675	712	1.09405E-05	18	0.0629427	746	1.14642E-05
3	0.00761078	90	1.386E-06	11	0.0622381	738	1.13359E-05	19	0.05794997	687	1.05548E-05
4	0.01197959	142	2.182E-06	12	0.0670411	795	1.22107E-05	20	0.04668288	553	8.50269E-06
5	0.02015171	239	3.67E-06	13	0.0694199	823	1.26439E-05	21	0.03910102	464	7.12175E-06
6	0.02781454	330	5.066E-06	14	0.0695133	824	1.2661E-05	22	0.02837249	336	5.16769E-06
7	0.036048	427	6.566E-06	15	0.0641538	761	1.16848E-05	23	0.01967073	233	3.58277E-06
									TOTAL	11,855	

2022 Hourly Traffic Volumes and Fugitive PM2.5 Emisssions - Northbound I-880 XXX

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.0151052	1,509	0.005258	8	0.0476477	4759	0.01658458	16	0.06162429	6155	0.021449384
1	0.00900878	900	0.0031357	9	0.0477888	4773	0.01663371	17	0.06210403	6203	0.021616366
2	0.00741453	741	0.0025808	10	0.0487631	4870	0.016972844	18	0.06151583	6144	0.021411633
3	0.00708469	708	0.0024659	11	0.0510602	5100	0.017772374	19	0.05935378	5928	0.020659096
4	0.01162576	1161	0.0040465	12	0.0560025	5593	0.019492634	20	0.05235006	5229	0.01822133
5	0.0250506	2502	0.0087193	13	0.0604575	6038	0.021043268	21	0.0456266	4557	0.015881115
6	0.03832036	3827	0.0133381	14	0.0654242	6534	0.022772003	22	0.03517795	3513	0.012244286
7	0.04428031	4423	0.0154125	15	0.0630988	6302	0.021962629	23	0.02411437	2408	0.008393417
									TOTAL	99,877	

2022 Hourly Traffic Volumes and Fugitive PM2.5 Emisssions - Southbound I-880 XXX

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.01379141	1617	0.0057549	8	0.051724	6064	0.02158334	16	0.05698481	6681	0.023778579
1	0.01022633	1199	0.0042672	9	0.0569846	6681	0.023778474	17	0.05706026	6690	0.023810062
2	0.00913437	1071	0.0038116	10	0.0598218	7014	0.024962392	18	0.0534551	6267	0.022305701
3	0.01076179	1262	0.0044907	11	0.0581738	6821	0.024274728	19	0.04833611	5667	0.020169653
4	0.02341202	2745	0.0097693	12	0.0569301	6675	0.023755763	20	0.03806259	4463	0.015882728
5	0.04138471	4852	0.017269	13	0.058185	6822	0.024279379	21	0.03352764	3931	0.013990386
6	0.04805434	5634	0.0200521	14	0.0605164	7095	0.025252223	22	0.02836342	3326	0.011835466
7	0.04899043	5744	0.0204427	15	0.0559705	6562	0.023355309	23	0.02014857	2362	0.008407578
									TOTAL	117,247	

2022 Hourly Traffic Volumes and Fugitive PM2.5 Emisssions - Alpenrose XXX

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.0127045	127	0.000078	8	0.0431635	432	0.000264057	16	0.06296341	631	0.000385185
1	0.00783481	79	4.793E-05	9	0.0516323	517	0.000315866	17	0.06380157	639	0.000390313
2	0.00714188	72	4.369E-05	10	0.0600675	602	0.000367469	18	0.0629427	631	0.000385059
3	0.00761078	76	4.656E-05	11	0.0622381	624	0.000380748	19	0.05794997	581	0.000354515
4	0.01197959	120	7.329E-05	12	0.0670411	672	0.000410131	20	0.04668288	468	0.000285587
5	0.02015171	202	0.0001233	13	0.0694199	696	0.000424683	21	0.03910102	392	0.000239205
6	0.02781454	279	0.0001702	14	0.0695133	697	0.000425255	22	0.02837249	284	0.000173572
7	0.036048	361	0.0002205	15	0.0641538	643	0.000392467	23	0.01967073	197	0.000120338
									TOTAL	10,020	

2022 Hourly Traffic Volumes and Fugitive PM2.5 Emis Balintine Drive XXX

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.0127045	151	0.000129	8	0.0431635	512	0.000439144	16	0.06296341	746	0.000640587
1	0.00783481	93	7.971E-05	9	0.0516323	612	0.000525305	17	0.06380157	756	0.000649115
2	0.00714188	85	7.266E-05	10	0.0600675	712	0.000611125	18	0.0629427	746	0.000640377
3	0.00761078	90	7.743E-05	11	0.0622381	738	0.000633208	19	0.05794997	687	0.000589581
4	0.01197959	142	0.0001219	12	0.0670411	795	0.000682073	20	0.04668288	553	0.00047495
5	0.02015171	239	0.000205	13	0.0694199	823	0.000706275	21	0.03910102	464	0.000397812
6	0.02781454	330	0.000283	14	0.0695133	824	0.000707225	22	0.02837249	336	0.000288661
7	0.036048	427	0.0003668	15	0.0641538	761	0.000652698	23	0.01967073	233	0.000200129
									TOTAL	11,855	

2022 Hourly Traffic Volumes and PM2.5 Emisssions - Northbound I-880 XXX

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.0151052	1,509	0.000597	8	0.0476477	4759	0.00188249	16	0.06162429	6155	0.001920473
1	0.00900878	900	0.0003559	9	0.0477888	4773	0.00167019	17	0.06210403	6203	0.001935424
2	0.00741453	741	0.0002929	10	0.0487631	4870	0.001704243	18	0.06151583	6144	0.001917093
3	0.00708469	708	0.0002799	11	0.0510602	5100	0.001784524	19	0.05935378	5928	0.002074379
4	0.01162576	1161	0.0004593	12	0.0560025	5593	0.001957255	20	0.05235006	5229	0.002068275
5	0.0250506	2502	0.0009897	13	0.0604575	6038	0.002112954	21	0.0456266	4557	0.001802641
6	0.03832036	3827	0.001514	14	0.0654242	6534	0.002286536	22	0.03517795	3513	0.00138983
7	0.04428031	4423	0.0017495	15	0.0630988	6302	0.001966427	23	0.02411437	2408	0.000952724
									TOTAL	99,877	

2022 Hourly Traffic Volumes and PM2.5 Emisssions - Southbound I-880 XXX

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.01379141	1617	0.0006532	8	0.051724	6064	0.00191447	16	0.05698481	6681	0.002387607
1	0.01022633	1199	0.0004844	9	0.0569846	6681	0.002109181	17	0.05706026	6690	0.002390768
2	0.00913437	1071	0.0004326	10	0.0598218	7014	0.001904573	18	0.0534551	6267	0.002239715
3	0.01076179	1262	0.0005097	11	0.0581738	6821	0.002173441	19	0.04833611	5667	0.002289426
4	0.02341202	2745	0.0011089	12	0.0569301	6675	0.002385316	20	0.03806259	4463	0.001802824
5	0.04138471	4852	0.0019602	13	0.058185	6822	0.002437892	21	0.03352764	3931	0.001588027
6	0.04805434	5634	0.0015299	14	0.0605164	7095	0.002535575	22	0.02836342	3326	0.001343425
7	0.04899043	5744	0.0018133	15	0.0559705	6562	0.002345106	23	0.02014857	2362	0.000954331
									TOTAL	117,247	

2022 Hourly Traffic Volumes and PM2.5 Emisssions - Alpenrose XXX

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.0127045	127	0.000006	8	0.0431635	432	1.9707E-05	16	0.06296341	631	2.8747E-05
1	0.00783481	79	3.577E-06	9	0.0516323	517	2.35736E-05	17	0.06380157	639	2.91297E-05
2	0.00714188	72	3.261E-06	10	0.0600675	602	2.74248E-05	18	0.0629427	631	2.87376E-05
3	0.00761078	76	3.475E-06	11	0.0622381	624	2.84159E-05	19	0.05794997	581	2.6458E-05
4	0.01197959	120	5.469E-06	12	0.0670411	672	3.06087E-05	20	0.04668288	468	2.13139E-05
5	0.02015171	202	9.201E-06	13	0.0694199	696	3.16948E-05	21	0.03910102	392	1.78522E-05
6	0.02781454	279	1.27E-05	14	0.0695133	697	3.17375E-05	22	0.02837249	284	1.29539E-05
7	0.036048	361	1.646E-05	15	0.0641538	643	2.92905E-05	23	0.01967073	197	8.981E-06
									TOTAL	10,020	

2022 Hourly Traffic Volumes and PM2.5 Emisssions - Balintine Drive XXX

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.0127045	151	0.000007	8	0.0431635	512	2.3266E-05	16	0.06296341	746	3.39385E-05
1	0.00783481	93	4.223E-06	9	0.0516323	612	2.78308E-05	17	0.06380157	756	3.43903E-05
2	0.00714188	85	3.85E-06	10	0.0600675	712	3.23776E-05	18	0.0629427	746	3.39274E-05
3	0.00761078	90	4.102E-06	11	0.0622381	738	3.35476E-05	19	0.05794997	687	3.12362E-05
4	0.01197959	142	6.457E-06	12	0.0670411	795	3.61365E-05	20	0.04668288	553	2.5163E-05
5	0.02015171	239	1.086E-05	13	0.0694199	823	3.74187E-05	21	0.03910102	464	2.10762E-05
6	0.02781454	330	1.499E-05	14	0.0695133	824	3.7469E-05	22	0.02837249	336	1.52933E-05
7	0.036048	427	1.943E-05	15	0.0641538	761	3.45801E-05	23	0.01967073	233	1.06029E-05
									TOTAL	11,855	

2022 Hourly Traffic Volumes and TOG Evaporative Emisssions - Northbound I-880 XXX

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.0151052	1,509	0.004204	8	0.0476477	4759	0.013259898	16	0.06162429	6155	0.020267548
1	0.00900878	900	0.0025071	9	0.0477888	4773	0.014407444	17	0.06210403	6203	0.02042533
2	0.00741453	741	0.0020634	10	0.0487631	4870	0.014701189	18	0.06151583	6144	0.020231877
3	0.00708469	708	0.0019716	11	0.0510602	5100	0.015393709	19	0.05935378	5928	0.01789407
4	0.01162576	1161	0.0032353	12	0.0560025	5593	0.016883728	20	0.05235006	5229	0.014568532
5	0.0250506	2502	0.0069713	13	0.0604575	6038	0.018226824	21	0.0456266	4557	0.012697456
6	0.03832036	3827	0.0106642	14	0.0654242	6534	0.019724184	22	0.03517795	3513	0.009789695
7	0.04428031	4423	0.0133497	15	0.0630988	6302	0.020752514	23	0.02411437	2408	0.006710804
									TOTAL	99,877	

2022 Hourly Traffic Volumes and TOG Evaporative Emisssions - Southbound I-880 XXX

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.01379141	1617	0.0046012	8	0.051724	6064	0.037389226	16	0.05698481	6681	0.02059604
1	0.01022633	1199	0.0034118	9	0.0569846	6681	0.041191897	17	0.05706026	6690	0.020623309
2	0.00913437	1071	0.0030475	10	0.0598218	7014	0.028828547	18	0.0534551	6267	0.019320293
3	0.01076179	1262	0.0035904	11	0.0581738	6821	0.022937219	19	0.04833611	5667	0.016126278
4	0.02341202	2745	0.0078109	12	0.0569301	6675	0.020576278	20	0.03806259	4463	0.012698746
5	0.04138471	4852	0.0138071	13	0.058185	6822	0.021029812	21	0.03352764	3931	0.011185758
6	0.04805434	5634	0.0231577	14	0.0605164	7095	0.02187245	22	0.02836342	3326	0.009462831
7	0.04899043	5744	0.0354133	15	0.0559705	6562	0.02022942	23	0.02014857	2362	0.006722126
									TOTAL	117,247	

2022 Hourly Traffic Volumes and TOG Evaporative Emisssions - Alpenrose XXX

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.0127045	127	0.000135	8	0.0431635	432	0.000459126	16	0.06296341	631	0.000669736
1	0.00783481	79	8.334E-05	9	0.0516323	517	0.000549207	17	0.06380157	639	0.000678651
2	0.00714188	72	7.597E-05	10	0.0600675	602	0.000638932	18	0.0629427	631	0.000669515
3	0.00761078	76	8.096E-05	11	0.0622381	624	0.000662021	19	0.05794997	581	0.000616408
4	0.01197959	120	0.0001274	12	0.0670411	672	0.000713109	20	0.04668288	468	0.000496561
5	0.02015171	202	0.0002144	13	0.0694199	696	0.000738412	21	0.03910102	392	0.000415914
6	0.02781454	279	0.0002959	14	0.0695133	697	0.000739406	22	0.02837249	284	0.000301795
7	0.036048	361	0.0003834	15	0.0641538	643	0.000682397	23	0.01967073	197	0.000209236
									TOTAL	10,020	

2022 Hourly Traffic Volumes and TOG Evaporative Em Balintine Drive XXX

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.0127045	151	0.000161	8	0.0431635	512	0.000545397	16	0.06296341	746	0.00079558
1	0.00783481	93	9.9E-05	9	0.0516323	612	0.000652404	17	0.06380157	756	0.000806171
2	0.00714188	85	9.024E-05	10	0.0600675	712	0.000758989	18	0.0629427	746	0.000795318
3	0.00761078	90	9.617E-05	11	0.0622381	738	0.000786416	19	0.05794997	687	0.000732232
4	0.01197959	142	0.0001514	12	0.0670411	795	0.000847104	20	0.04668288	553	0.000589866
5	0.02015171	239	0.0002546	13	0.0694199	823	0.000877161	21	0.03910102	464	0.000494065
6	0.02781454	330	0.0003515	14	0.0695133	824	0.000878341	22	0.02837249	336	0.000358503
7	0.036048	427	0.0004555	15	0.0641538	761	0.000810621	23	0.01967073	233	0.000248551
									TOTAL	11,855	

2022 Hourly Traffic Volumes and TOG Exhaust Emisssions - Northbound I-880 XXX

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.0151052	1,509	0.005711	8	0.0476477	4759	0.018015318	16	0.06162429	6155	0.019314283
1	0.00900878	900	0.0034062	9	0.0477888	4773	0.016036718	17	0.06210403	6203	0.019464644
2	0.00741453	741	0.0028034	10	0.0487631	4870	0.01636368	18	0.06151583	6144	0.019280289
3	0.00708469	708	0.0026787	11	0.0510602	5100	0.017134515	19	0.05935378	5928	0.019917631
4	0.01162576	1161	0.0043956	12	0.0560025	5593	0.018793034	20	0.05235006	5229	0.01979327
5	0.0250506	2502	0.0094715	13	0.0604575	6038	0.020288015	21	0.0456266	4557	0.017251166
6	0.03832036	3827	0.0144887	14	0.0654242	6534	0.021954705	22	0.03517795	3513	0.013300591
7	0.04428031	4423	0.0167421	15	0.0630988	6302	0.019776438	23	0.02411437	2408	0.009117511
									TOTAL	99,877	

2022 Hourly Traffic Volumes and TOG Exhaust Emisssions - Southbound I-880 XXX

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.01379141	1617	0.0062513	8	0.051724	6064	0.029020751	16	0.05698481	6681	0.022925154
1	0.01022633	1199	0.0046354	9	0.0569846	6681	0.031972307	17	0.05706026	6690	0.022955507
2	0.00913437	1071	0.0041404	10	0.0598218	7014	0.022807172	18	0.0534551	6267	0.021505139
3	0.01076179	1262	0.0048781	11	0.0581738	6821	0.021858388	19	0.04833611	5667	0.021909673
4	0.02341202	2745	0.0106121	12	0.0569301	6675	0.022903157	20	0.03806259	4463	0.017252918
5	0.04138471	4852	0.0187588	13	0.058185	6822	0.02340798	21	0.03352764	3931	0.015197325
6	0.04805434	5634	0.0183208	14	0.0605164	7095	0.024345908	22	0.02836342	3326	0.012856502
7	0.04899043	5744	0.027487	15	0.0559705	6562	0.022517075	23	0.02014857	2362	0.009132893
									TOTAL	117,247	

2022 Hourly Traffic Volumes and TOG Exhaust Emisssions - Alpenrose XXX

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.0127045	127	0.000111	8	0.0431635	432	0.000377864	16	0.06296341	631	0.000551197
1	0.00783481	79	6.859E-05	9	0.0516323	517	0.000452002	17	0.06380157	639	0.000558535
2	0.00714188	72	6.252E-05	10	0.0600675	602	0.000525846	18	0.0629427	631	0.000551016
3	0.00761078	76	6.663E-05	11	0.0622381	624	0.000544848	19	0.05794997	581	0.000507308
4	0.01197959	120	0.0001049	12	0.0670411	672	0.000586894	20	0.04668288	468	0.000408673
5	0.02015171	202	0.0001764	13	0.0694199	696	0.000607719	21	0.03910102	392	0.0003423
6	0.02781454	279	0.0002435	14	0.0695133	697	0.000608536	22	0.02837249	284	0.00024838
7	0.036048	361	0.0003156	15	0.0641538	643	0.000561618	23	0.01967073	197	0.000172202
									TOTAL	10,020	

2022 Hourly Traffic Volumes and TOG Exhaust Emisssi Balintine Drive XXX

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.0127045	151	0.000124	8	0.0431635	512	0.000420409	16	0.06296341	746	0.000613258
1	0.00783481	93	7.631E-05	9	0.0516323	612	0.000502894	17	0.06380157	756	0.000621421
2	0.00714188	85	6.956E-05	10	0.0600675	712	0.000585052	18	0.0629427	746	0.000613056
3	0.00761078	90	7.413E-05	11	0.0622381	738	0.000606194	19	0.05794997	687	0.000564427
4	0.01197959	142	0.0001167	12	0.0670411	795	0.000652974	20	0.04668288	553	0.000454687
5	0.02015171	239	0.0001963	13	0.0694199	823	0.000676143	21	0.03910102	464	0.00038084
6	0.02781454	330	0.0002709	14	0.0695133	824	0.000677053	22	0.02837249	336	0.000276345
7	0.036048	427	0.0003511	15	0.0641538	761	0.000624852	23	0.01967073	233	0.000191591
									TOTAL	11,855	

	Road Link	Description	Direction	No. Lanes	Link Length (miles)	Link Width (ft)	Link Width (m)	Release Height (ft)	Release Height (m)	Initial Vertical Dimention (m)	Initial Vertical Dispersion (m)	Average Speed (mph)	Average Vehicles per Day
Costco	NPRK_DPM	DPM from Newpark Mall Road	Both	4	0.73	48	14.63	11.15	3.4	6.80	3.16	25mph	13,300
	NPRK_XXX	XXX from Newpark Mall Road	Both	4	0.73	48	14.63	4.27	1.3	2.86	1.33	25mph	13,300

Emission Factors

	Speed Category	1	2	3	4	5	6	7
	Travel Speed (mph)	25	30	35	45	55	60	65
Emisions per vehicle (g/VMT)	DPM	0.00124	0.00213	0.001086	0.002246	0.002877	0.003203	0.003432
	PM2.5	0.00320	0.00356	0.002333	0.00315	0.003742	0.004134	0.004506
	TOG Exhaust	0.05388	0.04231	0.036027	0.028734	0.028328	0.030339	0.034192
	TOG Evap	0.06266	0.05223	0.044757	0.034823	0.0284912	0.0261169	0.0241079

	Freeway	Major/Collector
Fugitive PM2.5	0.028395	0.03376

DPM

2021 Hourly Traffic Volumes and DPM Emisssions - DPM from Newpark Mall Road

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.0127045	169	4.225E-05	8	0.0431635	574	0.000143541	16	0.06296341	837	0.000209386
1	0.00783481	104	2.605E-05	9	0.0516323	687	0.000171704	17	0.06380157	849	0.000212174
2	0.00714188	95	2.375E-05	10	0.0600675	799	0.000199756	18	0.0629427	837	0.000209318
3	0.00761078	101	2.531E-05	11	0.0622381	828	0.000206975	19	0.05794997	771	0.000192714
4	0.01197959	159	3.984E-05	12	0.0670411	892	0.000222947	20	0.04668288	621	0.000155245
5	0.02015171	268	6.702E-05	13	0.0694199	923	0.000230858	21	0.03910102	520	0.000130031
6	0.02781454	370	9.25E-05	14	0.0695133	925	0.000231168	22	0.02837249	377	9.43534E-05
7	0.036048	479	0.0001199	15	0.0641538	853	0.000213345	23	0.01967073	262	6.54155E-05
									TOTAL	13,300	

2021 Hourly Traffic Volumes and Fugitive PM2.5 Emis XXX from Newpark Mall Road

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.0127045	169	0.0011512	8	0.0431635	574	0.0039113	16	0.06296341	837	0.005705486
1	0.00783481	104	0.00071	9	0.0516323	687	0.004678705	17	0.06380157	849	0.005781436
2	0.00714188	95	0.0006472	10	0.0600675	799	0.005443071	18	0.0629427	837	0.005703609
3	0.00761078	101	0.0006897	11	0.0622381	828	0.005639765	19	0.05794997	771	0.005251189
4	0.01197959	159	0.0010855	12	0.0670411	892	0.006074986	20	0.04668288	621	0.004230211
5	0.02015171	268	0.0018261	13	0.0694199	923	0.006290544	21	0.03910102	520	0.003543174
6	0.02781454	370	0.0025204	14	0.0695133	925	0.006299007	22	0.02837249	377	0.002570998
7	0.036048	479	0.0032665	15	0.0641538	853	0.00581335	23	0.01967073	262	0.001782481
									TOTAL	13,300	

2021 Hourly Traffic Volumes and PM2.5 Emisssions - XXX from Newpark Mall Road

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.0127045	169	0.000109	8	0.0431635	574	0.000370381	16	0.06296341	837	0.000540281
1	0.00783481	104	6.723E-05	9	0.0516323	687	0.00044305	17	0.06380157	849	0.000547473
2	0.00714188	95	6.128E-05	10	0.0600675	799	0.000515432	18	0.0629427	837	0.000540104
3	0.00761078	101	6.531E-05	11	0.0622381	828	0.000534058	19	0.05794997	771	0.000497262
4	0.01197959	159	0.0001028	12	0.0670411	892	0.000575271	20	0.04668288	621	0.00040058
5	0.02015171	268	0.0001729	13	0.0694199	923	0.000595684	21	0.03910102	520	0.000335521
6	0.02781454	370	0.0002387	14	0.0695133	925	0.000596485	22	0.02837249	377	0.000243461
7	0.036048	479	0.0003093	15	0.0641538	853	0.000550496	23	0.01967073	262	0.000168792
									TOTAL	13,300	

2021 Hourly Traffic Volumes and TOG Evaporative Em XXX from Newpark Mall Road

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.0127045	169	0.0021366	8	0.0431635	574	0.007259241	16	0.06296341	837	0.01058919
1	0.00783481	104	0.0013177	9	0.0516323	687	0.008683518	17	0.06380157	849	0.01073015
2	0.00714188	95	0.0012011	10	0.0600675	799	0.010102156	18	0.0629427	837	0.010585707
3	0.00761078	101	0.00128	11	0.0622381	828	0.010467213	19	0.05794997	771	0.009746029
4	0.01197959	159	0.0020147	12	0.0670411	892	0.01127497	20	0.04668288	621	0.00785113
5	0.02015171	268	0.0033891	13	0.0694199	923	0.011675039	21	0.03910102	520	0.006576012
6	0.02781454	370	0.0046778	14	0.0695133	925	0.011690745	22	0.02837249	377	0.004771686
7	0.036048	479	0.0060626	15	0.0641538	853	0.010789382	23	0.01967073	262	0.003308224
									TOTAL	13,300	

2021 Hourly Traffic Volumes and TOG Exhaust Emisssi XXX from Newpark Mall Road

Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s	Hour	Fraction Per Hour	VPH	g/s
0	0.0127045	169	0.0018373	8	0.0431635	574	0.006242138	16	0.06296341	837	0.009105523
1	0.00783481	104	0.001133	9	0.0516323	687	0.007466858	17	0.06380157	849	0.009226734
2	0.00714188	95	0.0010328	10	0.0600675	799	0.008686729	18	0.0629427	837	0.009102528
3	0.00761078	101	0.0011006	11	0.0622381	828	0.009000637	19	0.05794997	771	0.008380499
4	0.01197959	159	0.0017324	12	0.0670411	892	0.009695218	20	0.04668288	621	0.006751097
5	0.02015171	268	0.0029143	13	0.0694199	923	0.010039233	21	0.03910102	520	0.005654637
6	0.02781454	370	0.0040224	14	0.0695133	925	0.010052738	22	0.02837249	377	0.004103118
7	0.036048	479	0.0052131	15	0.0641538	853	0.009277667	23	0.01967073	262	0.002844704
									TOTAL	13,300	

Newpark Mall Project - Costco, Fremont, CA - Single Source Impacts from Roadways
AERMOD Risk Modeling Parameters and Maximum Concentrations
1st Floor Receptors

Emissions Years	2022
Receptor Information	
Number of Receptors	
Receptor Height (in m) =	1.5 (1st Floor)
Receptor Distances =	Nearby Residential Locations
Meteorological Conditions	
BAAQMD Hayward Met Data	2013 - 2017
Land Use Classification	urban
Wind Speed =	variable
Wind Direction =	variable

I-880 - Maximum Offsite Residential Concentration - Floor 1

	TAC Concentrations (µg/m^3)		
Analysis Years	**DPM**	**Exhaust TOG**	**Evaporative TOG**
2022	0.10356	1.78288	1.57892

	PM2.5 Concentrations (µg/m^3)		
Analysis Years	**Total PM2.5**	**Fugitive PM2.5**	**Vehicle PM2.5**
2022	1.91695	1.73819	0.17876

Balentine Drive - Maximum Offsite Residential Concentration - Floor 1

	TAC Concentrations (µg/m^3)		
Analysis Years	**DPM**	**Exhaust TOG**	**Evaporative TOG**
2022	0.00002	0.00102	0.00132

	PM2.5 Concentrations (µg/m^3)		
Analysis Years	**Total PM2.5**	**Fugitive PM2.5**	**Vehicle PM2.5**
2022	0.00112	0.00106	0.00006

Alpenrose - Maximum Offsite Residential Concentration - Floor 1

	TAC Concentrations (µg/m^3)		
Analysis Years	**DPM**	**Exhaust TOG**	**Evaporative TOG**
2022	0.00001	0.00094	0.00115

	PM2.5 Concentrations (µg/m^3)		
Analysis Years	**Total PM2.5**	**Fugitive PM2.5**	**Vehicle PM2.5**
2022	0.00071	0.00066	0.00005

Newpark - Maximum Offsite Residential Concentration - Floor 1

	TAC Concentrations (µg/m^3)		
Analysis Years	**DPM**	**Exhaust TOG**	**Evaporative TOG**
2022	0.00165	0.08021	0.09328

	PM2.5 Concentrations (µg/m^3)		
Analysis Years	**Total PM2.5**	**Fugitive PM2.5**	**Vehicle PM2.5**
2022	0.05502	0.05026	0.00476

Newpark Mall Project - Costco, Newark, CA - Single Source Impacts from I880
Maximum DPM Cancer Risk and PM2.5 Calculations
1.5 meter receptor height

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

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

Values

	Infant/Child			Adult
Age --> / Parameter	3rd Trimester	0 - 2	2 - 16	16 - 30
ASF =	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
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

Roadway Cancer Risk by Year - Maximum Impact Receptor Location

Maximum - Exposure Information					Concentration (ug/m3)			Cancer Risk (per million)			TOTAL
Exposure Year	Exposure Duration (years)	Age	Year	Age Sensitivity Factor	DPM	Exhaust TOG	Evaporative TOG	DPM	Exhaust TOG	Evaporative TOG	
0	0.25	-0.25 - 0*	2022	10	0.1036	1.7829	1.5789	1.408	0.138	0.0072	1.55
1	1	0 - 1	2022	10	0.1036	1.7829	1.5789	17.009	1.672	0.0872	18.77
2	1	1 - 2	2023	10	0.1036	1.7829	1.5789	17.009	1.672	0.0872	18.77
3	1	2 - 3	2024	3	0.1036	1.7829	1.5789	2.678	0.263	0.0137	2.95
4	1	3 - 4	2025	3	0.1036	1.7829	1.5789	2.678	0.263	0.0137	2.95
5	1	4 - 5	2026	3	0.1036	1.7829	1.5789	2.678	0.263	0.0137	2.95
6	1	5 - 6	2027	3	0.1036	1.7829	1.5789	2.678	0.263	0.0137	2.95
7	1	6 - 7	2028	3	0.1036	1.7829	1.5789	2.678	0.263	0.0137	2.95
8	1	7 - 8	2029	3	0.1036	1.7829	1.5789	2.678	0.263	0.0137	2.95
9	1	8 - 9	2030	3	0.1036	1.7829	1.5789	2.678	0.263	0.0137	2.95
10	1	9 - 10	2031	3	0.1036	1.7829	1.5789	2.678	0.263	0.0137	2.95
11	1	10 - 11	2032	3	0.1036	1.7829	1.5789	2.678	0.263	0.0137	2.95
12	1	11 - 12	2033	3	0.1036	1.7829	1.5789	2.678	0.263	0.0137	2.95
13	1	12 - 13	2034	3	0.1036	1.7829	1.5789	2.678	0.263	0.0137	2.95
14	1	13 - 14	2035	3	0.1036	1.7829	1.5789	2.678	0.263	0.0137	2.95
15	1	14 - 15	2036	3	0.1036	1.7829	1.5789	2.678	0.263	0.0137	2.95
16	1	15 - 16	2037	3	0.1036	1.7829	1.5789	2.678	0.263	0.0137	2.95
17	1	16-17	2038	1	0.1036	1.7829	1.5789	0.297	0.029	0.0015	0.328
18	1	17-18	2039	1	0.1036	1.7829	1.5789	0.297	0.029	0.0015	0.328
19	1	18-19	2040	1	0.1036	1.7829	1.5789	0.297	0.029	0.0015	0.328
20	1	19-20	2041	1	0.1036	1.7829	1.5789	0.297	0.029	0.0015	0.328
21	1	20-21	2042	1	0.1036	1.7829	1.5789	0.297	0.029	0.0015	0.328
22	1	21-22	2043	1	0.1036	1.7829	1.5789	0.297	0.029	0.0015	0.328
23	1	22-23	2044	1	0.1036	1.7829	1.5789	0.297	0.029	0.0015	0.328
24	1	23-24	2045	1	0.1036	1.7829	1.5789	0.297	0.029	0.0015	0.328
25	1	24-25	2046	1	0.1036	1.7829	1.5789	0.297	0.029	0.0015	0.328
26	1	25-26	2047	1	0.1036	1.7829	1.5789	0.297	0.029	0.0015	0.328
27	1	26-27	2048	1	0.1036	1.7829	1.5789	0.297	0.029	0.0015	0.328
28	1	27-28	2049	1	0.1036	1.7829	1.5789	0.297	0.029	0.0015	0.328
29	1	28-29	2050	1	0.1036	1.7829	1.5789	0.297	0.029	0.0015	0.328
30	1	29-30	2051	1	0.1036	1.7829	1.5789	0.297	0.029	0.0015	0.328
Total Increased Cancer Risk								77.08	7.576	0.395	**85.1**

* Third trimester of pregnancy

Maximum	
Hazard Index	**Total PM2.5 (µg/m3)**
0.0207	1.917

Newpark Mall Project - Costco, Newark, CA - Single Source Impacts from Alpenrose
Maximum DPM Cancer Risk and PM2.5 Calculations
1.5 meter receptor height

Cancer Risk Calculation Method

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

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

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

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

Cancer Potency Factors (mg/kg-day)$^{-1}$

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

Values

	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
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

Roadway Cancer Risk by Year - Maximum Impact Receptor Location

Maximum - Exposure Information					Concentration (ug/m3)			Cancer Risk (per million)			TOTAL
Exposure Year	**Exposure Duration (years)**	**Age**	**Year**	**Age Sensitivity Factor**	**DPM**	**Exhaust TOG**	**Evaporative TOG**	**DPM**	**Exhaust TOG**	**Evaporative TOG**	
0	0.25	-0.25 - 0*	2022	10	0.00001	0.0009	0.0012	0.0001	0.0001	0.00001	0.0002
1	1	0 - 1	2022	10	0.00001	0.0009	0.0012	0.002	0.001	0.0001	0.003
2	1	1 - 2	2023	10	0.00001	0.0009	0.0012	0.002	0.001	0.0001	0.003
3	1	2 - 3	2024	3	0.00001	0.0009	0.0012	0.0003	0.0001	0.00001	0.0004
4	1	3 - 4	2025	3	0.00001	0.0009	0.0012	0.0003	0.0001	0.00001	0.0004
5	1	4 - 5	2026	3	0.00001	0.0009	0.0012	0.0003	0.0001	0.00001	0.0004
6	1	5 - 6	2027	3	0.00001	0.0009	0.0012	0.0003	0.0001	0.00001	0.0004
7	1	6 - 7	2028	3	0.00001	0.0009	0.0012	0.0003	0.0001	0.00001	0.0004
8	1	7 - 8	2029	3	0.00001	0.0009	0.0012	0.0003	0.0001	0.00001	0.0004
9	1	8 - 9	2030	3	0.00001	0.0009	0.0012	0.0003	0.0001	0.00001	0.0004
10	1	9 - 10	2031	3	0.00001	0.0009	0.0012	0.0003	0.0001	0.00001	0.0004
11	1	10 - 11	2032	3	0.00001	0.0009	0.0012	0.0003	0.0001	0.00001	0.0004
12	1	11 - 12	2033	3	0.00001	0.0009	0.0012	0.0003	0.0001	0.00001	0.0004
13	1	12 - 13	2034	3	0.00001	0.0009	0.0012	0.0003	0.0001	0.00001	0.0004
14	1	13 - 14	2035	3	0.00001	0.0009	0.0012	0.0003	0.0001	0.00001	0.0004
15	1	14 - 15	2036	3	0.00001	0.0009	0.0012	0.0003	0.0001	0.00001	0.0004
16	1	15 - 16	2037	3	0.00001	0.0009	0.0012	0.0003	0.0001	0.00001	0.0004
17	1	16-17	2038	1	0.00001	0.0009	0.0012	0.00003	0.00002	0.000001	0.00005
18	1	17-18	2039	1	0.00001	0.0009	0.0012	0.00003	0.00002	0.000001	0.00005
19	1	18-19	2040	1	0.00001	0.0009	0.0012	0.00003	0.00002	0.000001	0.00005
20	1	19-20	2041	1	0.00001	0.0009	0.0012	0.00003	0.00002	0.000001	0.00005
21	1	20-21	2042	1	0.00001	0.0009	0.0012	0.00003	0.00002	0.000001	0.00005
22	1	21-22	2043	1	0.00001	0.0009	0.0012	0.00003	0.00002	0.000001	0.00005
23	1	22-23	2044	1	0.00001	0.0009	0.0012	0.00003	0.00002	0.000001	0.00005
24	1	23-24	2045	1	0.00001	0.0009	0.0012	0.00003	0.00002	0.000001	0.00005
25	1	24-25	2046	1	0.00001	0.0009	0.0012	0.00003	0.00002	0.000001	0.00005
26	1	25-26	2047	1	0.00001	0.0009	0.0012	0.00003	0.00002	0.000001	0.00005
27	1	26-27	2048	1	0.00001	0.0009	0.0012	0.00003	0.00002	0.000001	0.00005
28	1	27-28	2049	1	0.00001	0.0009	0.0012	0.00003	0.00002	0.000001	0.00005
29	1	28-29	2050	1	0.00001	0.0009	0.0012	0.00003	0.00002	0.000001	0.00005
30	1	29-30	2051	1	0.00001	0.0009	0.0012	0.00003	0.00002	0.000001	0.00005
Total Increased Cancer Risk								0.01	0.004	0.0003	**0.01**

Maximum	
Hazard Index	**Total PM2.5 (µg/m3)**
0.0000	0.001

* Third trimester of pregnancy

Newpark Mall Project - Costco, Newark, CA - Single Source Impacts from Cedar
Maximum DPM Cancer Risk and PM2.5 Calculations
1.5 meter receptor height

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

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

Values

	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
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

Roadway Cancer Risk by Year - Maximum Impact Receptor Location

Maximum - Exposure Information					Concentration (ug/m3)			Cancer Risk (per million)			TOTAL
Exposure Year	**Exposure Duration (years)**	**Age**	**Year**	**Age Sensitivity Factor**	**DPM**	**Exhaust TOG**	**Evaporative TOG**	**DPM**	**Exhaust TOG**	**Evaporative TOG**	
0	0.25	-0.25 - 0*	2022	10	0.00002	0.0010	0.0013	0.0003	0.0001	0.00001	0.0004
1	1	0 - 1	2022	10	0.00002	0.0010	0.0013	0.003	0.001	0.0001	0.004
2	1	1 - 2	2023	10	0.00002	0.0010	0.0013	0.003	0.001	0.0001	0.004
3	1	2 - 3	2024	3	0.00002	0.0010	0.0013	0.001	0.0002	0.00001	0.001
4	1	3 - 4	2025	3	0.00002	0.0010	0.0013	0.001	0.0002	0.00001	0.001
5	1	4 - 5	2026	3	0.00002	0.0010	0.0013	0.001	0.0002	0.00001	0.001
6	1	5 - 6	2027	3	0.00002	0.0010	0.0013	0.001	0.0002	0.00001	0.001
7	1	6 - 7	2028	3	0.00002	0.0010	0.0013	0.001	0.0002	0.00001	0.001
8	1	7 - 8	2029	3	0.00002	0.0010	0.0013	0.001	0.0002	0.00001	0.001
9	1	8 - 9	2030	3	0.00002	0.0010	0.0013	0.001	0.0002	0.00001	0.001
10	1	9 - 10	2031	3	0.00002	0.0010	0.0013	0.001	0.0002	0.00001	0.001
11	1	10 - 11	2032	3	0.00002	0.0010	0.0013	0.001	0.0002	0.00001	0.001
12	1	11 - 12	2033	3	0.00002	0.0010	0.0013	0.001	0.0002	0.00001	0.001
13	1	12 - 13	2034	3	0.00002	0.0010	0.0013	0.001	0.0002	0.00001	0.001
14	1	13 - 14	2035	3	0.00002	0.0010	0.0013	0.001	0.0002	0.00001	0.001
15	1	14 - 15	2036	3	0.00002	0.0010	0.0013	0.001	0.0002	0.00001	0.001
16	1	15 - 16	2037	3	0.00002	0.0010	0.0013	0.001	0.0002	0.00001	0.001
17	1	16-17	2038	1	0.00002	0.0010	0.0013	0.000	0.00002	0.000001	0.0001
18	1	17-18	2039	1	0.00002	0.0010	0.0013	0.000	0.00002	0.000001	0.0001
19	1	18-19	2040	1	0.00002	0.0010	0.0013	0.000	0.00002	0.000001	0.0001
20	1	19-20	2041	1	0.00002	0.0010	0.0013	0.000	0.00002	0.000001	0.0001
21	1	20-21	2042	1	0.00002	0.0010	0.0013	0.000	0.00002	0.000001	0.0001
22	1	21-22	2043	1	0.00002	0.0010	0.0013	0.000	0.00002	0.000001	0.0001
23	1	22-23	2044	1	0.00002	0.0010	0.0013	0.000	0.00002	0.000001	0.0001
24	1	23-24	2045	1	0.00002	0.0010	0.0013	0.000	0.00002	0.000001	0.0001
25	1	24-25	2046	1	0.00002	0.0010	0.0013	0.000	0.00002	0.000001	0.0001
26	1	25-26	2047	1	0.00002	0.0010	0.0013	0.000	0.00002	0.000001	0.0001
27	1	26-27	2048	1	0.00002	0.0010	0.0013	0.000	0.00002	0.000001	0.0001
28	1	27-28	2049	1	0.00002	0.0010	0.0013	0.000	0.00002	0.000001	0.0001
29	1	28-29	2050	1	0.00002	0.0010	0.0013	0.000	0.00002	0.000001	0.0001
30	1	29-30	2051	1	0.00002	0.0010	0.0013	0.000	0.00002	0.000001	0.0001
Total Increased Cancer Risk								0.01	0.004	0.0003	**0.02**

Maximum	
Hazard Index	**Total PM2.5 (µg/m3)**
0.0000	0.001

* Third trimester of pregnancy

Newpark Mall Project - Costco, Newark, CA - Single Source Impacts from Newpark
Maximum DPM Cancer Risk and PM2.5 Calculations
1.5 meter receptor height

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

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

Values

	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
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

Roadway Cancer Risk by Year - Maximum Impact Receptor Location

Maximum - Exposure Information					Concentration (ug/m3)			Cancer Risk (per million)			TOTAL
Exposure Year	**Exposure Duration (years)**	**Age**	**Year**	**Age Sensitivity Factor**	**DPM**	**Exhaust TOG**	**Evaporative TOG**	**DPM**	**Exhaust TOG**	**Evaporative TOG**	
0	0.25	-0.25 - 0*	2022	10	0.0017	0.0802	0.0933	0.022	0.006	0.0004	0.03
1	1	0 - 1	2022	10	0.0017	0.0802	0.0933	0.271	0.075	0.0052	0.35
2	1	1 - 2	2023	10	0.0017	0.0802	0.0933	0.271	0.075	0.0052	0.35
3	1	2 - 3	2024	3	0.0017	0.0802	0.0933	0.043	0.012	0.0008	0.06
4	1	3 - 4	2025	3	0.0017	0.0802	0.0933	0.043	0.012	0.0008	0.06
5	1	4 - 5	2026	3	0.0017	0.0802	0.0933	0.043	0.012	0.0008	0.06
6	1	5 - 6	2027	3	0.0017	0.0802	0.0933	0.043	0.012	0.0008	0.06
7	1	6 - 7	2028	3	0.0017	0.0802	0.0933	0.043	0.012	0.0008	0.06
8	1	7 - 8	2029	3	0.0017	0.0802	0.0933	0.043	0.012	0.0008	0.06
9	1	8 - 9	2030	3	0.0017	0.0802	0.0933	0.043	0.012	0.0008	0.06
10	1	9 - 10	2031	3	0.0017	0.0802	0.0933	0.043	0.012	0.0008	0.06
11	1	10 - 11	2032	3	0.0017	0.0802	0.0933	0.043	0.012	0.0008	0.06
12	1	11 - 12	2033	3	0.0017	0.0802	0.0933	0.043	0.012	0.0008	0.06
13	1	12 - 13	2034	3	0.0017	0.0802	0.0933	0.043	0.012	0.0008	0.06
14	1	13 - 14	2035	3	0.0017	0.0802	0.0933	0.043	0.012	0.0008	0.06
15	1	14 - 15	2036	3	0.0017	0.0802	0.0933	0.043	0.012	0.0008	0.06
16	1	15 - 16	2037	3	0.0017	0.0802	0.0933	0.043	0.012	0.0008	0.06
17	1	16-17	2038	1	0.0017	0.0802	0.0933	0.005	0.001	0.0001	0.006
18	1	17-18	2039	1	0.0017	0.0802	0.0933	0.005	0.001	0.0001	0.006
19	1	18-19	2040	1	0.0017	0.0802	0.0933	0.005	0.001	0.0001	0.006
20	1	19-20	2041	1	0.0017	0.0802	0.0933	0.005	0.001	0.0001	0.006
21	1	20-21	2042	1	0.0017	0.0802	0.0933	0.005	0.001	0.0001	0.006
22	1	21-22	2043	1	0.0017	0.0802	0.0933	0.005	0.001	0.0001	0.006
23	1	22-23	2044	1	0.0017	0.0802	0.0933	0.005	0.001	0.0001	0.006
24	1	23-24	2045	1	0.0017	0.0802	0.0933	0.005	0.001	0.0001	0.006
25	1	24-25	2046	1	0.0017	0.0802	0.0933	0.005	0.001	0.0001	0.006
26	1	25-26	2047	1	0.0017	0.0802	0.0933	0.005	0.001	0.0001	0.006
27	1	26-27	2048	1	0.0017	0.0802	0.0933	0.005	0.001	0.0001	0.006
28	1	27-28	2049	1	0.0017	0.0802	0.0933	0.005	0.001	0.0001	0.006
29	1	28-29	2050	1	0.0017	0.0802	0.0933	0.005	0.001	0.0001	0.006
30	1	29-30	2051	1	0.0017	0.0802	0.0933	0.005	0.001	0.0001	0.006
Total Increased Cancer Risk								1.23	0.341	0.023	**1.6**

Maximum	
Hazard Index	**Total PM2.5 (µg/m3)**
0.0003	0.055

* Third trimester of pregnancy

Newpark Mall Project - Costco, Fremont, CA - Impacts to MEI from Roadways
AERMOD Risk Modeling Parameters and Maximum Concentrations
1st Floor Receptors

Emissions Years	2022
Receptor Information	
Number of Receptors	
Receptor Height (in m) =	1.5 (1st Floor)
Receptor Distances =	Nearby Residential Locations
Meteorological Conditions	
BAAQMD Hayward Met Data	2013 - 2017
Land Use Classification	urban
Wind Speed =	variable
Wind Direction =	variable

I-880 - Offsite MEI Concentration - Floor 1

	TAC Concentrations (µg/m^3)		
Analysis Years	**DPM**	**Exhaust TOG**	**Evaporative TOG**
2022	0.10356	1.78288	1.57892

	PM2.5 Concentrations (µg/m^3)		
Analysis Years	**Total PM2.5**	**Fugitive PM2.5**	**Vehicle PM2.5**
2022	1.91695	1.73819	0.17876

Balentine Drive - Offsite MEI Concentration - Floor 1

	TAC Concentrations (µg/m^3)		
Analysis Years	**DPM**	**Exhaust TOG**	**Evaporative TOG**
2022	0.00002	0.00088	0.00114

	PM2.5 Concentrations (µg/m^3)		
Analysis Years	**Total PM2.5**	**Fugitive PM2.5**	**Vehicle PM2.5**
2022	0.00097	0.00092	0.00005

Alpenrose - Offsite MEI Concentration - Floor 1

	TAC Concentrations (µg/m^3)		
Analysis Years	**DPM**	**Exhaust TOG**	**Evaporative TOG**
2022	0.00001	0.00062	0.00075

	PM2.5 Concentrations (µg/m^3)		
Analysis Years	**Total PM2.5**	**Fugitive PM2.5**	**Vehicle PM2.5**
2022	0.00046	0.00043	0.00003

Newpark - Offsite MEI Concentration - Floor 1

	TAC Concentrations (µg/m^3)		
Analysis Years	**DPM**	**Exhaust TOG**	**Evaporative TOG**
2022	0.00161	0.07767	0.09033

	PM2.5 Concentrations (µg/m^3)		
Analysis Years	**Total PM2.5**	**Fugitive PM2.5**	**Vehicle PM2.5**
2022	0.05328	0.04867	0.00461

Newpark Mall Project - Costco, Newark - Impacts from I880 on Construction MEI
Cumulative DPM Cancer Risk and PM2.5 Calculations
1.5 meter receptor height

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

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

Values

	Infant/Child			Adult
Age --> / Parameter	3rd Trimester	0 - 2	2 - 16	16 - 30
ASF =	10	10	3	1
DBR* =	361	1090	572	261
A =	1	1	1	1
EF =	350	350	350	350
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

Roadway Cancer Risk by Year - Maximum Impact Receptor Location

Maximum - Exposure Information					Concentration (ug/m3)			Cancer Risk (per million)			TOTAL
Exposure Year	Exposure Duration (years)	Age	Year	Age Sensitivity Factor	DPM	Exhaust TOG	Evaporative TOG	DPM	Exhaust TOG	Evaporative TOG	
0	0.25	-0.25 - 0*	2022	10	0.1036	1.7829	1.5789	1.408	0.138	0.0072	1.55
1	1	0 - 1	2022	10	0.1036	1.7829	1.5789	17.009	1.672	0.0872	18.77
2	1	1 - 2	2023	10	0.1036	1.7829	1.5789	17.009	1.672	0.0872	18.77
3	1	2 - 3	2024	3	0.1036	1.7829	1.5789	2.678	0.263	0.0137	2.95
4	1	3 - 4	2025	3	0.1036	1.7829	1.5789	2.678	0.263	0.0137	2.95
5	1	4 - 5	2026	3	0.1036	1.7829	1.5789	2.678	0.263	0.0137	2.95
6	1	5 - 6	2027	3	0.1036	1.7829	1.5789	2.678	0.263	0.0137	2.95
7	1	6 - 7	2028	3	0.1036	1.7829	1.5789	2.678	0.263	0.0137	2.95
8	1	7 - 8	2029	3	0.1036	1.7829	1.5789	2.678	0.263	0.0137	2.95
9	1	8 - 9	2030	3	0.1036	1.7829	1.5789	2.678	0.263	0.0137	2.95
10	1	9 - 10	2031	3	0.1036	1.7829	1.5789	2.678	0.263	0.0137	2.95
11	1	10 - 11	2032	3	0.1036	1.7829	1.5789	2.678	0.263	0.0137	2.95
12	1	11 - 12	2033	3	0.1036	1.7829	1.5789	2.678	0.263	0.0137	2.95
13	1	12 - 13	2034	3	0.1036	1.7829	1.5789	2.678	0.263	0.0137	2.95
14	1	13 - 14	2035	3	0.1036	1.7829	1.5789	2.678	0.263	0.0137	2.95
15	1	14 - 15	2036	3	0.1036	1.7829	1.5789	2.678	0.263	0.0137	2.95
16	1	15 - 16	2037	3	0.1036	1.7829	1.5789	2.678	0.263	0.0137	2.95
17	1	16-17	2038	1	0.1036	1.7829	1.5789	0.297	0.029	0.0015	0.328
18	1	17-18	2039	1	0.1036	1.7829	1.5789	0.297	0.029	0.0015	0.328
19	1	18-19	2040	1	0.1036	1.7829	1.5789	0.297	0.029	0.0015	0.328
20	1	19-20	2041	1	0.1036	1.7829	1.5789	0.297	0.029	0.0015	0.328
21	1	20-21	2042	1	0.1036	1.7829	1.5789	0.297	0.029	0.0015	0.328
22	1	21-22	2043	1	0.1036	1.7829	1.5789	0.297	0.029	0.0015	0.328
23	1	22-23	2044	1	0.1036	1.7829	1.5789	0.297	0.029	0.0015	0.328
24	1	23-24	2045	1	0.1036	1.7829	1.5789	0.297	0.029	0.0015	0.328
25	1	24-25	2046	1	0.1036	1.7829	1.5789	0.297	0.029	0.0015	0.328
26	1	25-26	2047	1	0.1036	1.7829	1.5789	0.297	0.029	0.0015	0.328
27	1	26-27	2048	1	0.1036	1.7829	1.5789	0.297	0.029	0.0015	0.328
28	1	27-28	2049	1	0.1036	1.7829	1.5789	0.297	0.029	0.0015	0.328
29	1	28-29	2050	1	0.1036	1.7829	1.5789	0.297	0.029	0.0015	0.328
30	1	29-30	2051	1	0.1036	1.7829	1.5789	0.297	0.029	0.0015	0.328
Total Increased Cancer Risk								77.08	7.576	0.395	**85.1**

Maximum	
Hazard Index	**Total PM2.5 (µg/m3)**
0.02	1.917

* Third trimester of pregnancy

Newpark Mall Project - Costco, Newark, CA - Impacts from Alpenrose on Construction MEI
Cumulative DPM Cancer Risk and PM2.5 Calculations
1.5 meter receptor height

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

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

Values

	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
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

Roadway Cancer Risk by Year - Maximum Impact Receptor Location

Maximum - Exposure Information					Concentration (ug/m3)			Cancer Risk (per million)			TOTAL
Exposure Year	**Exposure Duration (years)**	**Age**	**Year**	**Age Sensitivity Factor**	**DPM**	**Exhaust TOG**	**Evaporative TOG**	**DPM**	**Exhaust TOG**	**Evaporative TOG**	
0	0.25	-0.25 - 0*	2022	10	0.00001	0.0006	0.0008	0.0001	0.00005	0.000003	0.0002
1	1	0 - 1	2022	10	0.00001	0.0006	0.0008	0.002	0.001	0.00004	0.002
2	1	1 - 2	2023	10	0.00001	0.0006	0.0008	0.002	0.001	0.00004	0.002
3	1	2 - 3	2024	3	0.00001	0.0006	0.0008	0.0003	0.0001	0.00001	0.0004
4	1	3 - 4	2025	3	0.00001	0.0006	0.0008	0.0003	0.0001	0.00001	0.0004
5	1	4 - 5	2026	3	0.00001	0.0006	0.0008	0.0003	0.0001	0.00001	0.0004
6	1	5 - 6	2027	3	0.00001	0.0006	0.0008	0.0003	0.0001	0.00001	0.0004
7	1	6 - 7	2028	3	0.00001	0.0006	0.0008	0.0003	0.0001	0.00001	0.0004
8	1	7 - 8	2029	3	0.00001	0.0006	0.0008	0.0003	0.0001	0.00001	0.0004
9	1	8 - 9	2030	3	0.00001	0.0006	0.0008	0.0003	0.0001	0.00001	0.0004
10	1	9 - 10	2031	3	0.00001	0.0006	0.0008	0.0003	0.0001	0.00001	0.0004
11	1	10 - 11	2032	3	0.00001	0.0006	0.0008	0.0003	0.0001	0.00001	0.0004
12	1	11 - 12	2033	3	0.00001	0.0006	0.0008	0.0003	0.0001	0.00001	0.0004
13	1	12 - 13	2034	3	0.00001	0.0006	0.0008	0.0003	0.0001	0.00001	0.0004
14	1	13 - 14	2035	3	0.00001	0.0006	0.0008	0.0003	0.0001	0.00001	0.0004
15	1	14 - 15	2036	3	0.00001	0.0006	0.0008	0.0003	0.0001	0.00001	0.0004
16	1	15 - 16	2037	3	0.00001	0.0006	0.0008	0.0003	0.0001	0.00001	0.0004
17	1	16-17	2038	1	0.00001	0.0006	0.0008	0.00003	0.00001	0.000001	0.00004
18	1	17-18	2039	1	0.00001	0.0006	0.0008	0.00003	0.00001	0.000001	0.00004
19	1	18-19	2040	1	0.00001	0.0006	0.0008	0.00003	0.00001	0.000001	0.00004
20	1	19-20	2041	1	0.00001	0.0006	0.0008	0.00003	0.00001	0.000001	0.00004
21	1	20-21	2042	1	0.00001	0.0006	0.0008	0.00003	0.00001	0.000001	0.00004
22	1	21-22	2043	1	0.00001	0.0006	0.0008	0.00003	0.00001	0.000001	0.00004
23	1	22-23	2044	1	0.00001	0.0006	0.0008	0.00003	0.00001	0.000001	0.00004
24	1	23-24	2045	1	0.00001	0.0006	0.0008	0.00003	0.00001	0.000001	0.00004
25	1	24-25	2046	1	0.00001	0.0006	0.0008	0.00003	0.00001	0.000001	0.00004
26	1	25-26	2047	1	0.00001	0.0006	0.0008	0.00003	0.00001	0.000001	0.00004
27	1	26-27	2048	1	0.00001	0.0006	0.0008	0.00003	0.00001	0.000001	0.00004
28	1	27-28	2049	1	0.00001	0.0006	0.0008	0.00003	0.00001	0.000001	0.00004
29	1	28-29	2050	1	0.00001	0.0006	0.0008	0.00003	0.00001	0.000001	0.00004
30	1	29-30	2051	1	0.00001	0.0006	0.0008	0.00003	0.00001	0.000001	0.00004
Total Increased Cancer Risk								0.01	0.003	0.0002	**0.01**

Maximum	
Hazard Index	**Total PM2.5 (µg/m3)**
0.000	0.00046

* Third trimester of pregnancy

Newpark Mall Project - Costco, Newark, CA - Impacts from Cedar on Construction MEI
Cumulative DPM Cancer Risk and PM2.5 Calculations
1.5 meter receptor height

Cancer Risk Calculation Method

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

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

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

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

Cancer Potency Factors (mg/kg-day)$^{-1}$

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

Values

	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
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

Roadway Cancer Risk by Year - Maximum Impact Receptor Location

Maximum - Exposure Information					Concentration (ug/m3)			Cancer Risk (per million)			TOTAL
Exposure Year	**Exposure Duration (years)**	**Age**	**Year**	**Age Sensitivity Factor**	**DPM**	**Exhaust TOG**	**Evaporative TOG**	**DPM**	**Exhaust TOG**	**Evaporative TOG**	
0	0.25	-0.25 - 0*	2022	10	0.00002	0.0009	0.0011	0.0003	0.00007	0.00001	0.000
1	1	0 - 1	2022	10	0.00002	0.0009	0.0011	0.003	0.001	0.0001	0.004
2	1	1 - 2	2023	10	0.00002	0.0009	0.0011	0.003	0.001	0.0001	0.004
3	1	2 - 3	2024	3	0.00002	0.0009	0.0011	0.001	0.00013	0.00001	0.001
4	1	3 - 4	2025	3	0.00002	0.0009	0.0011	0.001	0.00013	0.00001	0.001
5	1	4 - 5	2026	3	0.00002	0.0009	0.0011	0.001	0.00013	0.00001	0.001
6	1	5 - 6	2027	3	0.00002	0.0009	0.0011	0.001	0.00013	0.00001	0.001
7	1	6 - 7	2028	3	0.00002	0.0009	0.0011	0.001	0.00013	0.00001	0.001
8	1	7 - 8	2029	3	0.00002	0.0009	0.0011	0.001	0.00013	0.00001	0.001
9	1	8 - 9	2030	3	0.00002	0.0009	0.0011	0.001	0.00013	0.00001	0.001
10	1	9 - 10	2031	3	0.00002	0.0009	0.0011	0.001	0.00013	0.00001	0.001
11	1	10 - 11	2032	3	0.00002	0.0009	0.0011	0.001	0.00013	0.00001	0.001
12	1	11 - 12	2033	3	0.00002	0.0009	0.0011	0.001	0.00013	0.00001	0.001
13	1	12 - 13	2034	3	0.00002	0.0009	0.0011	0.001	0.00013	0.00001	0.001
14	1	13 - 14	2035	3	0.00002	0.0009	0.0011	0.001	0.00013	0.00001	0.001
15	1	14 - 15	2036	3	0.00002	0.0009	0.0011	0.001	0.00013	0.00001	0.001
16	1	15 - 16	2037	3	0.00002	0.0009	0.0011	0.001	0.00013	0.00001	0.001
17	1	16-17	2038	1	0.00002	0.0009	0.0011	0.0001	0.00001	0.000001	0.0001
18	1	17-18	2039	1	0.00002	0.0009	0.0011	0.0001	0.00001	0.000001	0.0001
19	1	18-19	2040	1	0.00002	0.0009	0.0011	0.0001	0.00001	0.000001	0.0001
20	1	19-20	2041	1	0.00002	0.0009	0.0011	0.0001	0.00001	0.000001	0.0001
21	1	20-21	2042	1	0.00002	0.0009	0.0011	0.0001	0.00001	0.000001	0.0001
22	1	21-22	2043	1	0.00002	0.0009	0.0011	0.0001	0.00001	0.000001	0.0001
23	1	22-23	2044	1	0.00002	0.0009	0.0011	0.0001	0.00001	0.000001	0.0001
24	1	23-24	2045	1	0.00002	0.0009	0.0011	0.0001	0.00001	0.000001	0.0001
25	1	24-25	2046	1	0.00002	0.0009	0.0011	0.0001	0.00001	0.000001	0.0001
26	1	25-26	2047	1	0.00002	0.0009	0.0011	0.0001	0.00001	0.000001	0.0001
27	1	26-27	2048	1	0.00002	0.0009	0.0011	0.0001	0.00001	0.000001	0.0001
28	1	27-28	2049	1	0.00002	0.0009	0.0011	0.0001	0.00001	0.000001	0.0001
29	1	28-29	2050	1	0.00002	0.0009	0.0011	0.0001	0.00001	0.000001	0.0001
30	1	29-30	2051	1	0.00002	0.0009	0.0011	0.0001	0.00001	0.000001	0.0001
Total Increased Cancer Risk								0.01	0.004	0.000	**0.02**

Maximum	
Hazard Index	**Total PM2.5 (µg/m3)**
0.00	0.001

* Third trimester of pregnancy

Newpark Mall Project - Costco, Newark, CA - Impacts from Newpark on Construction MEI
Cumulative DPM Cancer Risk and PM2.5 Calculations
1.5 meter receptor height

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

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

Values

	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
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

Roadway Cancer Risk by Year - Maximum Impact Receptor Location

Maximum - Exposure Information					Concentration (ug/m3)			Cancer Risk (per million)			TOTAL
Exposure Year	**Exposure Duration (years)**	**Age**	**Year**	**Age Sensitivity Factor**	**DPM**	**Exhaust TOG**	**Evaporative TOG**	**DPM**	**Exhaust TOG**	**Evaporative TOG**	
0	0.25	-0.25 - 0*	2022	10	0.0016	0.0777	0.0903	0.022	0.006	0.0004	0.03
1	1	0 - 1	2022	10	0.0016	0.0777	0.0903	0.264	0.073	0.0050	0.34
2	1	1 - 2	2023	10	0.0016	0.0777	0.0903	0.264	0.073	0.0050	0.34
3	1	2 - 3	2024	3	0.0016	0.0777	0.0903	0.042	0.011	0.0008	0.05
4	1	3 - 4	2025	3	0.0016	0.0777	0.0903	0.042	0.011	0.0008	0.05
5	1	4 - 5	2026	3	0.0016	0.0777	0.0903	0.042	0.011	0.0008	0.05
6	1	5 - 6	2027	3	0.0016	0.0777	0.0903	0.042	0.011	0.0008	0.05
7	1	6 - 7	2028	3	0.0016	0.0777	0.0903	0.042	0.011	0.0008	0.05
8	1	7 - 8	2029	3	0.0016	0.0777	0.0903	0.042	0.011	0.0008	0.05
9	1	8 - 9	2030	3	0.0016	0.0777	0.0903	0.042	0.011	0.0008	0.05
10	1	9 - 10	2031	3	0.0016	0.0777	0.0903	0.042	0.011	0.0008	0.05
11	1	10 - 11	2032	3	0.0016	0.0777	0.0903	0.042	0.011	0.0008	0.05
12	1	11 - 12	2033	3	0.0016	0.0777	0.0903	0.042	0.011	0.0008	0.05
13	1	12 - 13	2034	3	0.0016	0.0777	0.0903	0.042	0.011	0.0008	0.05
14	1	13 - 14	2035	3	0.0016	0.0777	0.0903	0.042	0.011	0.0008	0.05
15	1	14 - 15	2036	3	0.0016	0.0777	0.0903	0.042	0.011	0.0008	0.05
16	1	15 - 16	2037	3	0.0016	0.0777	0.0903	0.042	0.011	0.0008	0.05
17	1	16-17	2038	1	0.0016	0.0777	0.0903	0.005	0.001	0.0001	0.006
18	1	17-18	2039	1	0.0016	0.0777	0.0903	0.005	0.001	0.0001	0.006
19	1	18-19	2040	1	0.0016	0.0777	0.0903	0.005	0.001	0.0001	0.006
20	1	19-20	2041	1	0.0016	0.0777	0.0903	0.005	0.001	0.0001	0.006
21	1	20-21	2042	1	0.0016	0.0777	0.0903	0.005	0.001	0.0001	0.006
22	1	21-22	2043	1	0.0016	0.0777	0.0903	0.005	0.001	0.0001	0.006
23	1	22-23	2044	1	0.0016	0.0777	0.0903	0.005	0.001	0.0001	0.006
24	1	23-24	2045	1	0.0016	0.0777	0.0903	0.005	0.001	0.0001	0.006
25	1	24-25	2046	1	0.0016	0.0777	0.0903	0.005	0.001	0.0001	0.006
26	1	25-26	2047	1	0.0016	0.0777	0.0903	0.005	0.001	0.0001	0.006
27	1	26-27	2048	1	0.0016	0.0777	0.0903	0.005	0.001	0.0001	0.006
28	1	27-28	2049	1	0.0016	0.0777	0.0903	0.005	0.001	0.0001	0.006
29	1	28-29	2050	1	0.0016	0.0777	0.0903	0.005	0.001	0.0001	0.006
30	1	29-30	2051	1	0.0016	0.0777	0.0903	0.005	0.001	0.0001	0.006
Total Increased Cancer Risk								1.20	0.330	0.023	**1.55**

* Third trimester of pregnancy

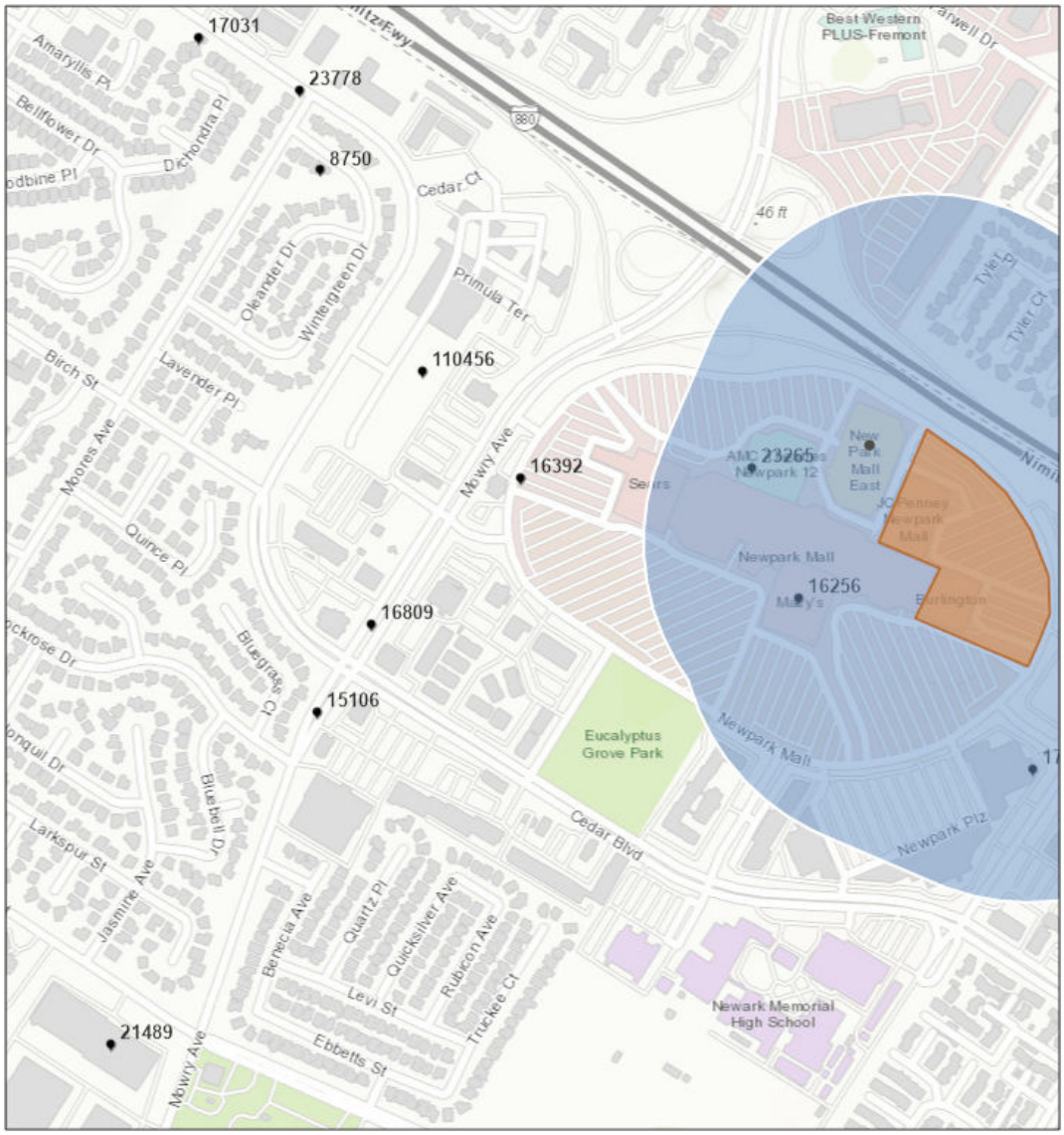
Maximum	
Hazard Index	**Total PM2.5 (µg/m3)**
0.0003	0.053

Stationary Source Risk & Hazards Screening Report

Area of Interest (AOI) Information

Area : 6,206,789.59 ft²

Mar 4 2021 9:33:46 Mountain Standard Time



Summary

Name	Count	Area(ft²)	Length(ft)
Permitted Facilities 2018	3	N/A	N/A

Permitted Facilities 2018

#	FACID	Name	Address	City	St
1	16256	Macy's (Newpark)	200 Newpark Mall	Newark	CA
2	17115	Fremont Ford and Auto Body of Fremont	39700 Balentine Dr	Newark	CA
3	23265	Newpark Mall LP	400 Newpark Mall	Newark	CA

#	Zip	County	Cancer	Hazard	PM_25	Type	Count
1	94560	Alameda	0.840	0.000	0.000	Generators	1
2	94560	Alameda	0.000	0.000	0.000	Contact BAAQMD	1
3	94560	Alameda	0.430	0.000	0.000	Generators	1

Note: The estimated risk and hazard impacts from these sources would be expected to be substantially lower when site specific Health Risk Screening Assessments are conducted.

The screening level map is not recommended for evaluating sensitive land uses such as schools, senior centers, day cares, and health facilities.

Bay Area Air Quality Management District

Risk & Hazard Stationary Source Inquiry Form

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

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

Click here for guidance on coducting risk & hazard screening, including roadways & freeways, refer to the District's Risk & Hazard Analysis flow chart.

Click here for District's Recommended Methods for Screening and Modeling Local Risks and Hazards document.

Table A: Requester Contact Information

Date of Request	
Contact Name	
Affiliation	
Phone	
Email	
Project Name	NewPark Costco
Address	
City	Newark
County	Alameda
Type (residential, commercial, mixed use, industrial, etc.)	Comercial
Project Size (# of units or building square feet)	
Comments:	

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

1. Complete all the contact and project information requested in Table A. Incomplete forms will not be processed. Please include a project site map.

2. Download and install the free program Google Earth, **http://www.google.com/earth/download/ge/,** and then download the county specific Google Earth stationary source application files from the District's website, **http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx.** The small points on the map represent stationary sources permitted by the District (Map A on right). These permitted sources include diesel back-up generators, gas stations, dry cleaners, boilers, printers, auto spray booths, etc. Click on a point to view the source's Information Table, including the name, location, and preliminary estimated cancer risk, hazard index, and PM2.5 concentration.

3. Find the project site in Google Earth by inputting the site's address in the Google Earth search box.

4. Identify stationary sources within at least a 1 of project site. Verify that the location of the source on the map matches with the source's address in the Information Table, by using the Google E search box to confirm the source's address location. Please report any mapping errors to the District.

Table B

5. List the stationary source information in blue section only.

6. Note that a small percentage of the stationary sources have Health Risk Screening Assessment (HRSA) data INSTEAD of screening level data. These sources will be noted by an asterisk next to the Plant Name (Map B on right). If HRSA values are presented, these values have already been modeled and cannot be adjusted further.

7. Email this completed form to District staff. District staff will provide the most recent risk, hazard, and PM2.5 data that are available for the source(s). If this information or data are not available, source emissions data will be provided. Staff will respond to inquiries within three weeks.

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

Table B: Google Earth data

Project Site

Distance from Receptor (feet) or MEI[1]	Plant No.	Facility Name	Address	Cancer Risk[2]	Hazard Risk[2]	$PM_{2.5}$[2]	Source No.[3]	Type of Source[4]	Fuel Code[5]	Status/Comments	Distance Adjustment Multiplier	Adjusted Cancer Risk Estimate	Adjusted Hazard Risk	Adjusted PM2.5
	16256	Macy's (Newpark)	200 Newpark Mall	0.84	0	0		Generators		2018 Dataset		0.0	0.000	0.000
												0.0	0.000	0.0000
												0.0000	0.0000	0.000
	23265	Newpark Mall LP	400 Newpark Mall	0.43	0	0		Generators		2018 Dataset		0.0	0.000	0.00
	17115	Fremont Ford and Auto Body of Fremont	39700 Balentine Dr	0.0016123	1.5749E-05	0.00323		Coating Operation		2018 Dataset		0.00	0.00000	0.00
												0.000	0.0000	0.00
												0.00	0.000	0.00

MEI

Distance from Receptor (feet) or MEI[1]	FACID (Plant No.)	Distance Adjustment Multiplier	Adjusted Cancer Risk Estimate	Adjusted Hazard Risk	Adjusted PM2.5
1439	16256	0.04	0.03	0.00000	0.000
1308	17115	0.13	0.0002	0.00000	0.0004
1669	23265	0.04	0.0172	0.00000	0.0000
			0.00	0.00	0.00
			0.00	0.00	0.00
			0.00	0.000	0.000
			0.00	0.00	0.00

Footnotes:

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

Date last updated:
03/13/2018

Attachment 6: Operations Community Risk

Gasoline Station Calculator

25,500,000 gallons/year

BAAQMD Evaluation

Controlled Rate (for all activities) = 0.516 lbs/10^3 gal throughput

Estimated Project Throughput	25,500	10^3 gal/year		
Annual Precursor Organic Compound Emissions	13,158	pounds/year	36.6	pounds/day
	6.58	tons/year		

Annual Fuel (gal)	Source	CARB TOG EF (lb/1000 gal)[1]	CARB TOG (lbs/year)	CARB TOG Fraction	BAAQMD TOG (lbs/yr)	Pump Islands	Tanks
25,500,000						16	3
	Fueling; Non-ORVR	0.42	1,392.30	0.1101095	1448.82	Volume Sources	
	& ORVR[2]	0.021	465.89	0.0368443	484.80	15	
	Tank Filling	0.15	3,825	0.3024986	3980.28		
	Tank breathing	0.024	612	0.0483998	636.84		
	Spillage	0.24	6120	0.4839978	6368.44		
	Fueling	0.009	229.5	0.0181499	238.82		
		TOTAL	12644.685	1	13158.00		
			6.3223425	35.124125			

			Benzene[3]					Ethyl Benzene[4]					Toluene[4]					Xylenes[4]				
	TOG (lbs/year)	Operation (hours/day)	% of TOG	lbs/yr	lbs/hr	(g/s)	Per Volume Source or Point Source (g/s)	% of TOG	lbs/yr	lbs/hr	(g/s)	Per Volume Source or Point Source (g/s)	% of TOG	lbs/yr	lbs/hr	(g/s)	Per Volume Source or Point Source (g/s)	% of TOG	lbs/yr	lbs/hr	(g/s)	Per Volume Source or Point Source (g/s)
Refuel	2087.69	17	0.3	6.26	0.0010094	0.000127177	8.47845E-06	1.6	33.40	0.005383	0.000678	4.52184E-05	8	167.01	0.026916	0.003391	0.000226	2.4	50.10444	0.008075	0.001017	6.78276E-05
Spill	6120.00	17	1	61.20	0.009863	0.001242719	8.28479E-05	1.6	97.92	0.015781	0.001988	0.000132557	8	489.60	0.078904	0.009942	0.000663	2.4	146.88	0.023671	0.002983	0.000198835
UST Fill	3825.00	24	0.3	11.48	0.0013099	0.000165049	5.50162E-05	1.6	61.20	0.006986	0.00088	0.00029342	8	306.00	0.034932	0.004401	0.001467	2.4	91.8	0.010479	0.00132	0.00044013
UTS Breath	612.00	24	0.3	1.836	0.0002096	2.64078E-05	2.64078E-05	1.6	9.792	0.001118	0.000141	0.000140841	8	48.96	0.005589	0.000704	0.000704	2.4	14.688	0.001677	0.000211	0.000211262
TOTAL				80.77	0.0123919	0.001561352			202.31	0.029268	0.003687727			1011.5748	0.146341	0.018438633			303.4724	0.043902	0.00553159	

1. Emission factors from CARB "Revised Emissions Factors for Gasoline Marketing Operations at California Gasoline Dispensing Facilities". December 23, 2013 (CARB, 2013). Assumes use of enhanced vapor recovery systems.
2. Fueling emissions based on CARB data for 2020 of 87% of vehicles use ORVR (CARB, 2013).
3. CAPCOA Air Toxics "Hot Spots" Program, Gasoline Service Station Industrywide Risk Assessment Guidelines, November 1997
4. Emission factors are derived from SJAPCD Gasoline Dispensing Operations VOC Calculator and Appendix A in the 1997 CAPCOA Air Toxics "Hot Spots" Program document, Gasoline Service Station Industrywide Risk Asessment Guidelines.

Gasoline Dispensing Operation Inputs	Vehicle Spillage	Vehicle Refuel	Breathing lc	Loading loss
SOURCE ID: 2.3.	1. SPILL	2. REFUEL	3. BREATHE	4. LOAD
EMISSION FACTOR:	Z1 SU Gasoline Dispe	Z1 SU Gasoline	Z1 SU Gasol	Z1 SU Gasoline Dispensing Op VOC Vapor
SOURCE TYPE:	VOLUME	VOLUME	POINT	POINT
RELEASE HEIGHT:	0 M	1 M	3.66 M	3.66 M
EMISSION RATE:	1 G/S	1 G/S	1 G/S	1 G/S
LENGTH OF SIDE:	6.5 M	6.5 M	—	—
INITIAL LATERAL DIMENSION:	1.51 M	1.51 M	—	—
INITIAL VERTICAL DIMENSION:	1.86 M	1.86 M	—	—
GAS EXIT TEMPERATURE:	—	—	288.7 1 K	291K
STACK INSIDE DIAMETER:	—	—	0.0508 M	.0508 M
GAS EXIT VELOCITY:	—	—	.000106 M/	0.00035 M/S
GAS EXIT FLOW RATE:	—	—	.0005 CFM	0.0015 CFM

File Name: Alameda (SF) - 2022 - majcol.EF
CT-EMFAC2017 Version: 1.0.2.27401
Run Date: 2/26/2021 9:46
Area: Alameda (SF)
Analysis Year: 2022
Season: Annual

==========

Vehicle Category	VMT Fraction Across Category	Diesel VMT Within Cat	Gas VMT Fraction Within Category
Truck 1	0.008	0.452	0.548
Truck 2	0.022	0.959	0.03
Non-Truck	0.97	0.014	0.965

==========

Road Type: Major/Collector
Silt Loading Factor: CARB 0.032 g/m2
Precipitation Correction: None P = NA N = NA

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Fleet Average Running Exhaust Emission Factors (grams/veh-mile)

Pollutant Name	<= 5 mph	10 mph	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph	45 mph	50 mph	55 mph	60 mph	65 mph	70 mph	75 mph
PM2.5	0.010291	0.006808	0.004652	0.003343	0.002568	0.002099	0.001823	0.001682	0.001645	0.001696	0.001829	0.002025	0.002289	0.002399	0.002399
PM10	0.011125	0.007349	0.005017	0.003604	0.002765	0.002257	0.001957	0.001803	0.00176	0.001812	0.001952	0.00216	0.002441	0.00256	0.00256
NOx	0.391929	0.316998	0.24608	0.20663	0.177006	0.152476	0.133596	0.120053	0.111656	0.108301	0.109959	0.116768	0.128741	0.130893	0.130893
CO	1.722047	1.488742	1.298021	1.153677	1.042978	0.952432	0.87685	0.813762	0.761693	0.71997	0.688741	0.669304	0.6643	0.668765	0.66945
HC	0.202018	0.132347	0.089361	0.063591	0.048177	0.038429	0.032164	0.028241	0.026018	0.025162	0.025559	0.027305	0.030656	0.033074	0.033127
TOG	0.222525	0.146118	0.098245	0.069603	0.052676	0.041989	0.035108	0.030791	0.028339	0.027388	0.027811	0.029714	0.033366	0.036003	0.03608
ROG	0.163767	0.107327	0.071703	0.050434	0.037999	0.030185	0.025174	0.022054	0.020313	0.019686	0.020086	0.021588	0.024399	0.026433	0.0265
1,3-Butadiene	0.001132	0.000736	0.000498	0.000355	0.000268	0.000213	0.000178	0.000157	0.000145	0.000141	0.000144	0.000155	0.000176	0.000176	0.000176
Acetaldehyde	0.002229	0.001579	0.000964	0.00061	0.000454	0.000359	0.000294	0.000251	0.000223	0.00021	0.000209	0.00022	0.000243	0.000247	0.000253
Acrolein	0.000253	0.000164	0.000111	0.00008	0.00006	0.000048	0.00004	0.000035	0.000033	0.000032	0.000033	0.000035	0.00004	0.00004	0.00004
Benzene	0.00517	0.003379	0.00227	0.001604	0.001211	0.000961	0.000803	0.000705	0.000649	0.000631	0.000643	0.000692	0.000782	0.000783	0.000784
Diesel PM	0.001604	0.001334	0.001011	0.000789	0.00068	0.000629	0.000616	0.000638	0.000693	0.000782	0.000903	0.001031	0.001159	0.001159	0.001159
Ethylbenzene	0.002147	0.001394	0.000945	0.000673	0.000509	0.000404	0.000338	0.000298	0.000275	0.000268	0.000274	0.000295	0.000334	0.000334	0.000334
Formaldehyde	0.006263	0.004323	0.002721	0.001788	0.001337	0.001059	0.000873	0.000752	0.000678	0.000645	0.000647	0.000688	0.000766	0.000775	0.000786
Naphthalene	0.000144	0.000095	0.000064	0.000045	0.000034	0.000028	0.000023	0.00002	0.000019	0.000018	0.000018	0.00002	0.000022	0.000021	0.000021
POM	0.000202	0.000133	0.000088	0.000061	0.000046	0.000036	0.00003	0.000026	0.000024	0.000023	0.000024	0.000026	0.000029	0.000029	0.000029
DEOG	0.018986	0.014101	0.008081	0.004687	0.003437	0.002702	0.002167	0.001785	0.00153	0.00138	0.001325	0.00136	0.001449	0.001509	0.001581
CO2	743.674437	605.9338	493.6709	411.6355	352.9236	313.1195	289.4897	278.7931	278.1245	284.9717	296.0733	308.4214	319.467	322.3019	322.3019
N2O	0.023596	0.020228	0.016802	0.014621	0.013115	0.011857	0.010981	0.010381	0.009974	0.0099	0.010008	0.010405	0.011048	0.011048	0.011048
CH4	0.031586	0.022208	0.016077	0.012206	0.009728	0.008076	0.006963	0.006226	0.00577	0.005543	0.005524	0.005729	0.006188	0.006509	0.006512
BC	0.002493	0.00163	0.001109	0.000794	0.000605	0.000489	0.000419	0.00038	0.000366	0.00037	0.000393	0.000431	0.000485	0.000485	0.000485

Fleet Average Fuel Consumption (gallons/veh-mile)

Fuel Type	<= 5 mph	10 mph	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph	45 mph	50 mph	55 mph	60 mph	65 mph	70 mph	75 mph
Gasoline	0.078195	0.063271	0.051763	0.043151	0.036862	0.032752	0.030349	0.02935	0.02946	0.030282	0.031556	0.032818	0.033808	0.033808	0.033808
Diesel	0.008272	0.006927	0.005476	0.004697	0.004118	0.003648	0.003307	0.003061	0.002912	0.002871	0.002933	0.003087	0.003341	0.003341	0.003341

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Fleet Average Running Loss Emission Factors (grams/veh-hour)

Pollutant Name	Emission Factor
HC	1.398992
TOG	1.495704
ROG	1.495704
1,3-Butadiene	0
Benzene	0.014957
Ethylbenzene	0.02453
Naphthalene	0.002094
CH4	0.220022
HFC	0.022248

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Fleet Average Tire Wear Factors (grams/veh-mile)

Pollutant Name	Emission Factor
PM2.5	0.002121
PM10	0.008482

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Fleet Average Brake Wear Factors (grams/veh-mile)

Pollutant Name	Emission Factor
PM2.5	0.016518
PM10	0.038543

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Fleet Average Road Dust Factors (grams/veh-mile)

Pollutant Name	Emission Factor
PM2.5	0.01577
PM10	0.105136

==========END==========

File Name: Alameda (SF) - 2022 - Annual.EF
CT-EMFAC2017 Versio 1.0.2.27401
Run Date: 3/2/2021 14:40
Area: Alameda (SF)
Analysis Year: 2022
Season: Annual

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Vehicle Category	VMT Fraction Across Category	Diesel VMT Within Cat	Gas VMT Fraction Within Category
Truck 1	0	0.452	0.548
Truck 2	1	0.959	0.03
Non-Truck	0	0.014	0.965

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Road Type: Major/Collector
Silt Loading Factor: CARB 0.032 g/m2
Precipitation Correctio CARB P = 61 days N = 365 days

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Fleet Average Running Exhaust Emission Factors (grams/veh-mile)

Pollutant Name	<= 5 mph	10 mph	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph	45 mph	50 mph	55 mph	60 mph	65 mph	70 mph	75 mph
PM2.5	0.041789	0.036171	0.027471	0.021569	0.01908	0.018241	0.018565	0.020034	0.02264	0.026377	0.031249	0.036292	0.041158	0.04116	0.04116
PM10	0.043687	0.037812	0.028716	0.022547	0.019944	0.019068	0.019406	0.020941	0.023664	0.027571	0.032663	0.037934	0.04302	0.043022	0.043022
NOx	11.511349	8.99828	6.525739	5.250028	4.261989	3.408225	2.73505	2.239477	1.91974	1.774721	1.803683	2.009952	2.389234	2.38959	2.38959
CO	2.591781	1.813809	1.132079	0.797428	0.618759	0.489829	0.389207	0.313032	0.258486	0.223518	0.206668	0.209195	0.227486	0.249478	0.279731
HC	0.475619	0.356032	0.216227	0.137415	0.102181	0.078869	0.061488	0.048867	0.040159	0.034744	0.032171	0.032905	0.035683	0.03777	0.040121
TOG	0.64567	0.482117	0.29041	0.183059	0.136251	0.105442	0.082421	0.065708	0.054223	0.047179	0.043993	0.045208	0.049114	0.052051	0.055441
ROG	0.495826	0.366782	0.216388	0.133588	0.099698	0.077743	0.061281	0.049363	0.041298	0.036578	0.034826	0.036273	0.039647	0.042184	0.045162
1,3-Butadiene	0.001111	0.000816	0.000485	0.000303	0.000226	0.000177	0.00014	0.000114	0.000096	0.000086	0.000082	0.000086	0.000094	0.000099	0.000105
Acetaldehyde	0.039826	0.029574	0.01743	0.010757	0.00805	0.006294	0.004971	0.004011	0.003359	0.002976	0.00283	0.002942	0.003205	0.003402	0.003636
Acrolein	0.00002	0.000013	0.000008	0.000006	0.000004	0.000003	0.000003	0.000002	0.000002	0.000002	0.000002	0.000002	0.000003	0.000003	0.000003
Benzene	0.011204	0.00828	0.004899	0.003037	0.002272	0.001777	0.001406	0.001137	0.000956	0.00085	0.000812	0.000845	0.000923	0.000977	0.00104
Diesel PM	0.042994	0.037291	0.028385	0.022341	0.019796	0.018946	0.019293	0.020819	0.023515	0.027379	0.032412	0.037621	0.042646	0.042646	0.042646
Ethylbenzene	0.001838	0.001348	0.000803	0.000501	0.000375	0.000293	0.000233	0.000189	0.00016	0.000143	0.000137	0.000143	0.000157	0.000166	0.000176
Formaldehyde	0.079861	0.059286	0.03495	0.021576	0.016145	0.012623	0.009972	0.008047	0.006741	0.005972	0.005682	0.005906	0.006436	0.006831	0.007299
Naphthalene	0.00056	0.000419	0.000252	0.000159	0.000118	0.000092	0.000072	0.000058	0.000048	0.000041	0.000039	0.00004	0.000043	0.000043	0.000045
POM	0.000927	0.000693	0.000409	0.000251	0.000191	0.000153	0.000126	0.000107	0.000095	0.00009	0.000092	0.000098	0.000107	0.000111	0.000116
DEOG	0.541232	0.401969	0.236882	0.146172	0.109382	0.085521	0.06755	0.054495	0.045631	0.040416	0.038439	0.039951	0.043519	0.046209	0.049391
CO2	3113.489502	2598.402	2065.929	1766.223	1548.703	1369.418	1232.491	1136.168	1079.079	1060.106	1080.984	1140.099	1236.195	1236.662	1236.662
N2O	0.476862	0.398517	0.316659	0.27291	0.239829	0.212344	0.19117	0.176101	0.166999	0.163768	0.166765	0.175822	0.190802	0.190802	0.190802
CH4	0.101458	0.079849	0.053007	0.036441	0.026854	0.020153	0.015194	0.011548	0.008903	0.007029	0.005757	0.005377	0.005566	0.005706	0.005845
BC	0.00651	0.005638	0.004294	0.003383	0.002998	0.00287	0.002922	0.003154	0.003563	0.004148	0.00491	0.005699	0.006461	0.006458	0.006458

Fleet Average Fuel Consumption (gallons/veh-mile)

Fuel Type	<= 5 mph	10 mph	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph	45 mph	50 mph	55 mph	60 mph	65 mph	70 mph	75 mph
Gasoline	0.013701	0.011123	0.009097	0.007562	0.006464	0.005736	0.005317	0.005147	0.005164	0.005315	0.005533	0.005756	0.005932	0.005932	0.005932
Diesel	0.291167	0.243129	0.192998	0.166291	0.146017	0.129133	0.116125	0.106878	0.10131	0.099359	0.101255	0.106876	0.116147	0.116147	0.116147

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Fleet Average Running Loss Emission Factors (grams/veh-hour)

Pollutant Name	Emission Factor
HC	0.119595
TOG	0.127863
ROG	0.127863
1,3-Butadiene	0
Benzene	0.001279
Ethylbenzene	0.002097
Naphthalene	0.000179
CH4	0.017587
HFC	0.065283

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Fleet Average Tire Wear Factors (grams/veh-mile)

Pollutant Name	Emission Factor
PM2.5	0.006919
PM10	0.027674

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Fleet Average Brake Wear Factors (grams/veh-mile)

Pollutant Name	Emission Factor
PM2.5	0.036652
PM10	0.085522

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Fleet Average Road Dust Factors (grams/veh-mile)

Pollutant Name	Emission Factor
PM2.5	0.128018
PM10	0.853453

==========END==========

2022/2023 Fuel Delivery HHDT Emissions - DPM

Road Segment	RD Seg ID	Rd Seg Length (ft)	Rd Seg Length (m)	Modeled RD Width (ft)	Modeled RD Width (m)	Plume Vertical Height[a] (ft)	Plume Vertical Height[a] (m)	Initial Vertical Dispersion[a] (m)	Release Height[a] (ft)	Release Height[a] (m)	Fraction that are HHDT	No. of Daily Trucks	Travel Speed (mph)	DPM EF[b] (g/veh-mi)	Truck Travel DPM Emissions Daily (g/day)	Hourly (g/s)	Annual (lbs/yr)
On-site:																	
Delivery Route		780.0	237.7	12	3.66	12	3.66	1.70	6	1.83	1	3.00	5	0.042994	0.019054	2.21E-07	0.015333

[a]Source Parameters from SJVAPCD *Guidance for Air Dispersion Modeling*

[b]Emissions Factor from CT_EMFAC2017

2022/2023 Fuel Delivery HDDT Idle Emissions - DPM

On-Site	Stack Height[a] (ft)	Stack Height[a] (m)	Stack Diameter[a] (ft)	Stack Diameter[a] (m)	Stack Velocity[a] (m/s)	Temp[a] (K)	Fraction of HHDT	No. of Daily Trucks	Idle Emissions (g/veh-hr)	Daily (g/day)	Idle Emissions Hourly (g/s)	Annual (g/yr)	(lb/yr)
Fuel Delivery Trucks	12.6	3.84	0.33	0.1	51.71	366	1	3	0.21497	0.161228	1.86606E-06	58.0419	0.12796
Warehouse Trucks	12.6	3.84	0.33	0.1	51.71	366	1	10	0.21497	1.074850	1.24404E-05	386.946	0.85307

[a]Source Parameters from SJVAPCD *Guidance for Air Dispersion Modeling*

[b]Emissions Factor from CT_EMFAC2017

Truck Info

Total Fuel Truck Trips per day	=	6	
Total Fuel Trucks per day	=	3	21.0 deliveries a week
Private HDDT Trips per day	=	0	NO HHDTs served by pumps
Total HDDTs per day	=	0	
Operation Days	=	360	
Daily Operation Hours	=	17	

Truck Idle DPM Emission Information

Emissions Factor @ 5 mph (g/mi)	=	0.042994
HHDT Idle Emissions Rate (g/hr)	=	0.21497
Idle Time per truck (min)	=	15

Customer Traffic Vehicle Emissions - DPM

Road Segment	Segment ID	Segment length (ft)	Segment length (m)	Segment Width (ft)	Segment Width (m)	Plume Height[a] (ft)	Plume Height[a] (m)	Vertical Dispersion[a] (ft)	Vertical Dispersion[a] (m)	Release Height[a] (ft)	Release Height[a] (m)	Trip Distribution (%)	Trips per day	Speed (mph)	DPM Emissions Factors[b] Evaporative g/veh-hr	Exhaust g/veh-mi	Total g/veh-mi	Customer DPM Emissions Daily (g/day)	Hourly (g/s)	Annual (lb/year)
On-site													Vehicles per day							
Gas Only		470	143.3	12	3.6576	8.5	2.6	3.95	1.21	4.25	1.30	0.67	2816	5	0	0.001604	0.001604	0.402069	6.57E-06	0.319108
Shared		675	205.7	12	3.6576	8.5	2.6	3.95	1.21	4.25	1.30	0.33	1387	5	0	0.001604	0.001604	0.28441	4.65E-06	0.225729
Fuel Queue		138	42.1	145	44.196	8.5	2.6	3.95	1.21	4.25	1.30	1	4203	0	0	0.002941	0.002941	0.323036	5.28E-06	0.256382

[a]Source Parameters from EPA *Transportation Conformity Guidance for Hot-Spot Analyses in PM2.5 and PM10 Nonattainment and Maintenace Areas* (2015)

[b]Emissions Factors from CT_EMFAC2017

Vehicle Info		
Vehicles per day	=	4203
Trips per day	=	8406
Operation Days	=	360
Operation Hours	=	17
Queue Idel Time (min)	=	10

1 mi = 5280 ft

Operation Days per year = 360

Onsite Traffic Road Dust Emissions

PM2.5 Emissions Factors

Emissions

Road Segment	Segment length (ft)	Segment length (m)	Segment Width (ft)	Segment Width (m)	Initial Vertical Dimention (ft)	Initial Vertical Dimention (m)	Vertical Dispersion[a] (ft)	Vertical Dispersion[a] (m)	Release Height[a] (ft)	Release Height[a] (m)	Trip Distribution	Vehicles per day	Tire Wear Factor (grams/veh-mile)	Brake Wear Factor (grams/veh-mile)	Road Dust Factor (grams/veh-mile)	Total g/veh-mi	Daily (g/day)	Hourly (g/s)	Annual (lb/year)
Gas Only	470	143.256	12	3.6576	9.4	2.86	4.36	1.33	4.27	1.30	0.67	2816	0.002121	0.016518	0.01577	0.034409	8.625189	9.98E-05	6.8455035
Shared	675	205.74	12	3.6576	9.4	2.86	4.36	1.33	4.27	1.30	0.33	1387	0.002121	0.016518	0.01577	0.034409	6.101244	7.06E-05	4.842338
Delivery Route	780	237.744	12	3.6576	9.4	2.86	4.36	1.33	4.27	1.30	1	13	0.002121	0.016518	0.01577	0.034409	0.066081	7.65E-07	0.052446

Customer Traffic Vehicle Emissions - PM2.5 Exhaust

	Road Segment	Segment ID	Segment length (ft)	Segment length (m)	Segment Width (ft)	Segment Width (m)	Plume Height[a] (ft)	Plume Height[a] (m)	Vertical Dispersion[a] (ft)	Vertical Dispersion[a] (m)	Release Height[a] (ft)	Release Height[a] (m)	Trip Distribution (%)	Trips per day	Speed (mph)	DPM Emissions Factors[b] Evaporative g/veh-hr	Evaporative g/veh-mi	Exhaust g/veh-mi	Total g/veh-mi	Customer DPM Emissions Daily (g/day)	Hourly (g/s)	Annual (lb/year)
														Vehicles per day								
On-site																						
	Gas Only		470	143.3	12	3.6576	8.5	2.6	3.95	1.21	4.25	1.30	0.67	2816	5	0	0	0.010291	0.010291	2.579611	4.22E-05	2.047344
	Shared		675	205.7	12	3.6576	8.5	2.6	3.95	1.21	4.25	1.30	0.33	1387	5	0	0	0.010291	0.010291	1.82475	2.98E-05	1.44824
	Fuel Queue		138	42.1	145	44.196	8.5	2.6	3.95	1.21	4.25	1.30	1	4203	0	0	0	0.018867	0.018867	2.072543	3.39E-05	1.644903

[a]Source Parameters from EPA *Transportation Conformity Guidance for Hot-Spot Analyses in PM2.5 and PM10 Nonattainment and Maintenace Areas* (2015)

[b]Emissions Factors from CT_EMFAC2017

Vehicle Info		
Vehicles per day	=	4203
Trips per day	=	8406
Operation Days	=	360
Operation Hours	=	17
Queue Idel Time (min)	=	10

Customer Traffic Vehicle Emissions - Benzene

Road Segment	Segment ID	Segment length (ft)	Segment length (m)	Segment Width (ft)	Segment Width (m)	Plume Height[a] (ft)	Plume Height[a] (m)	Vertical Dispersion[a] (ft)	Vertical Dispersion[a] (m)	Release Height[a] (ft)	Release Height[a] (m)	Trip Distribution (%)	Trips per day	Speed (mph)	Benzene Emissions Factors[b] Evaporative g/veh-hr	Exhaust g/veh-mi	Total g/veh-mi	Customer DPM Emissions Daily (g/day)	Hourly (g/s)	Annual (lb/year)
On-site													Vehicles per day							
Gas Only		470	143.3	12	3.6576	8.5	2.6	3.95	1.21	4.25	1.30	0.67	2816	5	0.014957	0.002991	0.00517	0.008161	2.045791	3.34E-05	1.623671
Shared		675	205.7	12	3.6576	8.5	2.6	3.95	1.21	4.25	1.30	0.33	1387	5	0.014957	0.002991	0.00517	0.008161	1.44714	2.36E-05	1.148544
Fuel Queue		138	42.1	145	44.196	8.5	2.6	3.95	1.21	4.25	1.30	1	4203	0	0.014957	0.005484	0.009478	0.014963	1.643655	2.69E-05	1.30451

[a]Source Parameters from EPA *Transportation Conformity Guidance for Hot-Spot Analyses in PM2.5 and PM10 Nonattainment and Maintenace Areas* (2015)

[b]Emissions Factors from CT_EMFAC2017

Vehicle Info		
Vehicles per day	=	4203
Trips per day	=	8406
Operation Days	=	360
Operation Hours	=	17
Queue Idel Time (min)	=	10

Customer Traffic Vehicle Emissions - Ethylbenzene

Road Segment	Segment ID	Segment length (ft)	Segment length (m)	Segment Width (ft)	Segment Width (m)	Plume Height[a] (ft)	Plume Height[a] (m)	Vertical Dispersion[a] (ft)	Vertical Dispersion[a] (m)	Release Height[a] (ft)	Release Height[a] (m)	Trip Distribution (%)	Trips per day	Speed (mph)	Ethylbenzene Emissions Factors[b] Evaporative g/veh-hr	Exhaust g/veh-mi	Total g/veh-mi	Customer DPM Emissions Daily (g/day)	Hourly (g/s)	Annual (lb/year)
On-site													Vehicles per day							
Gas Only		470	143.3	12	3.6576	8.5	2.6	3.95	1.21	4.25	1.30	0.66999762	2816	5	0.02453	0.004906	0.002147	0.007053	1.767952	2.89E-05	1.40316
Shared		675	205.7	12	3.6576	8.5	2.6	3.95	1.21	4.25	1.30	0.33000238	1387	5	0.02453	0.004906	0.002147	0.007053	1.25061	2.04E-05	0.99256
Fuel Queue		138	42.1	145	44.196	8.5	2.6	3.95	1.21	4.25	1.30	1	4203	0	0.02453	0.008994	0.003936	0.012931	1.42043	2.32E-05	1.127344

[a]Source Parameters from EPA *Transportation Conformity Guidance for Hot-Spot Analyses in PM2.5 and PM10 Nonattainment and Maintenance Areas* (2015)

[b]Emissions Factors from CT_EMFAC2017

Vehicle Info		
Vehicles per day	=	4203
Trips per day	=	8406
Operation Days	=	360
Operation Hours	=	17
Queue Idel Time (min)	=	10

Customer Traffic Vehicle Emissions - Formaldehyde

Road Segment	Segment ID	Segment length (ft)	Segment length (m)	Segment Width (ft)	Segment Width (m)	Plume Height[a] (ft)	Plume Height[a] (m)	Vertical Dispersion[a] (ft)	Vertical Dispersion[a] (m)	Release Height[a] (ft)	Release Height[a] (m)	Trip Distribution (%)	Trips per day	Speed (mph)	Formaldehyde Emissions Factors[b] Evaporative g/veh-hr	Evaporative g/veh-mi	Exhaust g/veh-mi	Total g/veh-mi	Customer DPM Emissions Daily (g/day)	Hourly (g/s)	Annual (lb/year)
On-site													Vehicles per day								
Gas Only		470	143.3	12	3.6576	8.5	2.6	3.95	1.21	4.25	1.30	0.66999762	2816	5	0	0	0.006263	0.006263	1.569925	2.57E-05	1.245993
Shared		675	205.7	12	3.6576	8.5	2.6	3.95	1.21	4.25	1.30	0.33000238	1387	5	0	0	0.006263	0.006263	1.11053	1.81E-05	0.881385
Fuel Queue		138	42.1	145	44.196	8.5	2.6	3.95	1.21	4.25	1.30	1	4203	0	0	0	0.011482	0.011482	1.261329	2.06E-05	1.001072

[a]Source Parameters from EPA *Transportation Conformity Guidance for Hot-Spot Analyses in PM2.5 and PM10 Nonattainment and Maintenance Areas* (2015)

[b]Emissions Factors from CT_EMFAC2017

Vehicle Info		
Vehicles per day	=	4203
Trips per day	=	8406
Operation Days	=	360
Operation Hours	=	17
Queue Idel Time (min)	=	10

Customer Traffic Vehicle Emissions - Naphthalene

Road Segment	Segment ID	Segment length (ft)	Segment length (m)	Segment Width (ft)	Segment Width (m)	Plume Height[a] (ft)	Plume Height[a] (m)	Vertical Dispersion[a] (ft)	Vertical Dispersion[a] (m)	Release Height[a] (ft)	Release Height[a] (m)	Trip Distribution (%)	Trips per day	Speed (mph)	Naphthalene Emissions Factors[b] Evaporative g/veh-hr	Exhaust g/veh-mi	Total g/veh-mi	Customer DPM Emissions Daily (g/day)	Hourly (g/s)	Annual (lb/year)
On-site													Vehicles per day							
Gas Only		470	143.3	12	3.6576	8.5	2.6	3.95	1.21	4.25	1.30	0.66999762	2816	5	0.002094	0.000419	0.000144	0.000563	0.141075	2.31E-06	0.111966
Shared		675	205.7	12	3.6576	8.5	2.6	3.95	1.21	4.25	1.30	0.33000238	1387	5	0.002094	0.000419	0.000144	0.000563	0.09979	1.63E-06	0.079202
Fuel Queue		138	42.1	145	44.196	8.5	2.6	3.95	1.21	4.25	1.30	1	4203	0	0.002094	0.000768	0.000264	0.001032	0.113344	1.85E-06	0.089957

[a]Source Parameters from EPA *Transportation Conformity Guidance for Hot-Spot Analyses in PM2.5 and PM10 Nonattainment and Maintenance Areas* (2015)

[b]Emissions Factors from CT_EMFAC2017

Vehicle Info		
Vehicles per day	=	4203
Trips per day	=	8406
Operation Days	=	360
Operation Hours	=	17
Queue Idel Time (min)	=	10

Customer Traffic Vehicle Emissions - 1,3-Butadiene

Road Segment	Segment ID	Segment length (ft)	Segment length (m)	Segment Width (ft)	Segment Width (m)	Plume Height[a] (ft)	Plume Height[a] (m)	Vertical Dispersion[a] (ft)	Vertical Dispersion[a] (m)	Release Height[a] (ft)	Release Height[a] (m)	Trip Distribution (%)	Trips per day	Speed (mph)	1,3-Butadiene Emissions Factors[b] Evaporative g/veh-hr	Evaporative g/veh-mi	Exhaust g/veh-mi	Total g/veh-mi	Customer DPM Emissions Daily (g/day)	Hourly (g/s)	Annual (lb/year)
On-site													Vehicles per day								
Gas Only		470	143.3	12	3.6576	8.5	2.6	3.95	1.21	4.25	1.30	0.66999762	2816	5	0	0	0.001132	0.001132	0.283755	4.64E-06	0.225206
Shared		675	205.7	12	3.6576	8.5	2.6	3.95	1.21	4.25	1.30	0.33000238	1387	5	0	0	0.001132	0.001132	0.20072	3.28E-06	0.159305
Fuel Queue		138	42.1	145	44.196	8.5	2.6	3.95	1.21	4.25	1.30	1	4203	0	0	0	0.002075	0.002075	0.227978	3.73E-06	0.180938

[a]Source Parameters from EPA *Transportation Conformity Guidance for Hot-Spot Analyses in PM2.5 and PM10 Nonattainment and Maintenance Areas* (2015)

[b]Emissions Factors from CT_EMFAC2017

Vehicle Info		
Vehicles per day	=	4203
Trips per day	=	8406
Operation Days	=	360
Operation Hours	=	17
Queue Idel Time (min)	=	10

Customer Traffic Vehicle Emissions - Acetaldehyde

Road Segment	Segment ID	Segment length (ft)	Segment length (m)	Segment Width (ft)	Segment Width (m)	Plume Height[a] (ft)	Plume Height[a] (m)	Vertical Dispersion[a] (ft)	Vertical Dispersion[a] (m)	Release Height[a] (ft)	Release Height[a] (m)	Trip Distribution (%)	Trips per day	Speed (mph)	Acetaldehyde Emissions Factors[b] Evaporative g/veh-hr	Evaporative g/veh-mi	Exhaust g/veh-mi	Total g/veh-mi	Customer DPM Emissions Daily (g/day)	Hourly (g/s)	Annual (lb/year)
On-site													Vehicles per day								
Gas Only		470	143.3	12	3.6576	8.5	2.6	3.95	1.21	4.25	1.30	0.66999762	2816	5	0	0	0.002229	0.002229	0.558736	9.13E-06	0.443449
Shared		675	205.7	12	3.6576	8.5	2.6	3.95	1.21	4.25	1.30	0.33000238	1387	5	0	0	0.002229	0.002229	0.39524	6.46E-06	0.313685
Fuel Queue		138	42.1	145	44.196	8.5	2.6	3.95	1.21	4.25	1.30	1	4203	0	0	0	0.004087	0.004087	0.448907	7.34E-06	0.356281

[a]Source Parameters from EPA *Transportation Conformity Guidance for Hot-Spot Analyses in PM2.5 and PM10 Nonattainment and Maintenance Areas* (2015)

[b]Emissions Factors from CT_EMFAC2017

Vehicle Info		
Vehicles per day	=	4203
Trips per day	=	8406
Operation Days	=	360
Operation Hours	=	17
Queue Idel Time (min)	=	10

Newpark Mall Costco - GDF Operation
AERMOD Risk Modeling Parameters & Maximum TAC Concentrations & Non-Cancer Health Effects
Single-Family Residential Receptors (1.5m heights)

Receptor Information

Number of Receptors 48
Receptor Height = 1.5 meters
Receptor Distances = Variable - placed at nearby residences

Meteorological Conditions

BAAQMD Hayward Airport Data 2013-2017
Land Use Classification Urban
Wind Speed = variable
Wind Direction = variable

Reference Exposure Levels (REL)

TAC	CPF	REL (µg/m3)	
		Acute	Chronic
	$(mg/kg\text{-}day)^{-1}$	(1-hour)	(annual avg)
DPM	1.10E+00	-	5
Benzene	1.00E-01	27	3
Ethylbenzene	8.70E-03	-	2,000
Formaldehyde	2.10E-02	55	9
Naphthalene	1.20E-01	-	9
1,3 Butadiene	6.00E-01	660	2
Acetaldehyde	1.00E-02	470	140
Toluene	-	37,000	300
Xylenes	-	22,000	700

Residential MEI Concentrations

TAC	Concentrations (µg/m3) 2022 Max Period Average
DPM	0.00013
Benzene	0.01051
Ethylbenzene	0.02666
Formaldehyde	0.00018
Naphthalene	0.00002
1,3 Butadiene	0.00003
Acetaldehyde	0.00007

Residential MEI Concentrations

PM2.5	Concentrations (µg/m3) 2022 Max Period Average
Fugitive	0.0005
DPM	0.0001
Gas Vehicle Exhaust	0.0003
Total $PM_{2.5}$	**0.001**

2022 - Non-Cancer Health Effects

TAC	Maximum Concentration*		Hazard Index	
	Period Avg (µg/m3)	1-Hour (µg/m3)	Chronic	Acute
DPM	0.00013	-	0.00003	-
Benzene	0.01051	0.90646	0.00350	0.0336
Ethylbenzene	0.02666	-	0.00001333	-
Formaldehyde	0.00018	0.02935	0.00002	0.000533636
Naphthalene	0.00002	-	2.22222E-06	-
1,3 Butadiene	0.00003	0.00531	0.000015	8.04545E-06
Acetaldehyde	0.00007	0.01045	0.0000005	2.2234E-05
Toluene	-	5.19899	-	0.000140513
Xylenes	-	1.94269	-	8.83041E-05
TOTAL			**0.0036**	**0.0344**

*Maximum for all receptors (residential and worker)

Newpark Mall Project - Costco, Newark, CA - Impacts from GDF Operation
Maximum Cancer Risk at Offsite MEI
1.5 meter receptor height

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

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

TAC	CPF
DPM	1.10E+00
Benzene	1.00E-01
Ethylbenzene	8.70E-03
Formaldehyde	2.10E-02
Naphthalene	1.20E-01
1,3 Butadiene	6.00E-01
Acetaldehyde	1.00E-02
Toluene	-
Xylenes	-

Values

	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
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

Project Operation Risk by Year - Maximum Impact Receptor Location

Maximum - Exposure Information					Concentration (ug/m3)							Cancer Risk (per million)							TOTAL
Exposure Year	**Exposure Duration (years)**	**Age**	**Year**	**Age Sensitivity Factor**	**DPM**	**Benzene**	**Ethylbenzene**	**Formaldehyde**	**Naphthalene**	**1,3 Butadiene**	**Acetaldehyde**	**DPM**	**Benzene**	**Ethylbenzene**	**Formaldehyde**	**Naphthalene**	**1,3 Butadiene**	**Acetaldehyde**	
0	0.25	-0.25 - 0*	2022	10	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0018	0.0130	0.0029	0.0000	0.0000	0.0002	0.00001	0.02
1	1	0 - 1	2022	10	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0214	0.1569	0.0346	0.0006	0.0004	0.0027	0.00003	0.22
2	1	1 - 2	2023	10	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0214	0.1569	0.0346	0.0006	0.0004	0.0027	0.00003	0.22
3	1	2 - 3	2024	3	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0034	0.0247	0.0055	0.0001	0.0001	0.0004	0.00002	0.03
4	1	3 - 4	2025	3	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0034	0.0247	0.0055	0.0001	0.0001	0.0004	0.00002	0.03
5	1	4 - 5	2026	3	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0034	0.0247	0.0055	0.0001	0.0001	0.0004	0.00002	0.03
6	1	5 - 6	2027	3	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0034	0.0247	0.0055	0.0001	0.0001	0.0004	0.00002	0.03
7	1	6 - 7	2028	3	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0034	0.0247	0.0055	0.0001	0.0001	0.0004	0.00002	0.03
8	1	7 - 8	2029	3	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0034	0.0247	0.0055	0.0001	0.0001	0.0004	0.00002	0.03
9	1	8 - 9	2030	3	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0034	0.0247	0.0055	0.0001	0.0001	0.0004	0.00002	0.03
10	1	9 - 10	2031	3	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0034	0.0247	0.0055	0.0001	0.0001	0.0004	0.00002	0.03
11	1	10 - 11	2032	3	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0034	0.0247	0.0055	0.0001	0.0001	0.0004	0.00002	0.03
12	1	11 - 12	2033	3	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0034	0.0247	0.0055	0.0001	0.0001	0.0004	0.00002	0.03
13	1	12 - 13	2034	3	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0034	0.0247	0.0055	0.0001	0.0001	0.0004	0.00002	0.03
14	1	13 - 14	2035	3	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0034	0.0247	0.0055	0.0001	0.0001	0.0004	0.00002	0.03
15	1	14 - 15	2036	3	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0034	0.0247	0.0055	0.0001	0.0001	0.0004	0.00002	0.03
16	1	15 - 16	2037	3	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0034	0.0247	0.0055	0.0001	0.0001	0.0004	0.00002	0.03
17	1	16-17	2038	1	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0004	0.0027	0.0006	0.00001	0.00001	0.00005	0.000002	0.004
18	1	17-18	2039	1	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0004	0.0027	0.0006	0.00001	0.00001	0.00005	0.000002	0.004
19	1	18-19	2040	1	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0004	0.0027	0.0006	0.00001	0.00001	0.00005	0.000002	0.004
20	1	19-20	2041	1	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0004	0.0027	0.0006	0.00001	0.00001	0.00005	0.000002	0.004
21	1	20-21	2042	1	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0004	0.0027	0.0006	0.00001	0.00001	0.00005	0.000002	0.004
22	1	21-22	2043	1	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0004	0.0027	0.0006	0.00001	0.00001	0.00005	0.000002	0.004
23	1	22-23	2044	1	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0004	0.0027	0.0006	0.00001	0.00001	0.00005	0.000002	0.004
24	1	23-24	2045	1	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0004	0.0027	0.0006	0.00001	0.00001	0.00005	0.000002	0.004
25	1	24-25	2046	1	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0004	0.0027	0.0006	0.00001	0.00001	0.00005	0.000002	0.004
26	1	25-26	2047	1	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0004	0.0027	0.0006	0.00001	0.00001	0.00005	0.000002	0.004
27	1	26-27	2048	1	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0004	0.0027	0.0006	0.00001	0.00001	0.00005	0.000002	0.004
28	1	27-28	2049	1	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0004	0.0027	0.0006	0.00001	0.00001	0.00005	0.000002	0.004
29	1	28-29	2050	1	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0004	0.0027	0.0006	0.00001	0.00001	0.00005	0.000002	0.004
30	1	29-30	2051	1	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0004	0.0027	0.0006	0.00001	0.00001	0.00005	0.000002	0.004
Total Increased Cancer Risk												0.10	0.71	0.16	0.003	0.002	0.012	0.0003	**1.0**

* Third trimester of pregnancy

Newpark Mall Project - Costco, Newark, CA - Impacts from Costco Construction and GDF Operation
Maximum Cancer Risk at Offsite MEI
1.5 meter receptor height

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

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

TAC	CPF
DPM	1.10E+00
Benzene	1.00E-01
Ethylbenzene	8.70E-03
Formaldehyde	2.10E-02
Naphthalene	1.20E-01
1,3 Butadiene	6.00E-01
Acetaldehyde	1.00E-02
Toluene	-
Xylenes	-

Values

	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
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

Project Operation Risk by Year - Maximum Impact Receptor Location

Maximum - Exposure Information					Concentration (ug/m3)							Cancer Risk (per million)							TOTAL
Exposure Year	**Exposure Duration (years)**	**Age**	**Year**	**Age Sensitivity Factor**	**DPM**	**Benzene**	**Ethylbenzene**	**Formaldehyde**	**Naphthalene**	**1,3 Butadiene**	**Acetaldehyde**	**DPM**	**Benzene**	**Ethylbenzene**	**Formaldehyde**	**Naphthalene**	**1,3 Butadiene**	**Acetaldehyde**	
0	0.25	-0.25 - 0*	2021	10	0.0431	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.5865	0.0000	0.0000	0.0000	0.0000	0.0000	0.00000	0.59
1	0.4	0 - 1	2021	10	0.0431	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	2.9888	0.0000	0.0000	0.0000	0.0000	0.0000	0.00000	2.99
2	1	1 - 2	2022	10	0.0211	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.9504	0.1569	0.0346	0.0006	0.0004	0.0027	0.00003	1.15
3	1	2 - 3	2023	3	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0034	0.0247	0.0055	0.0001	0.0001	0.0004	0.00002	0.03
4	1	3 - 4	2024	3	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0034	0.0247	0.0055	0.0001	0.0001	0.0004	0.00002	0.03
5	1	4 - 5	2025	3	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0034	0.0247	0.0055	0.0001	0.0001	0.0004	0.00002	0.03
6	1	5 - 6	2026	3	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0034	0.0247	0.0055	0.0001	0.0001	0.0004	0.00002	0.03
7	1	6 - 7	2027	3	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0034	0.0247	0.0055	0.0001	0.0001	0.0004	0.00002	0.03
8	1	7 - 8	2028	3	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0034	0.0247	0.0055	0.0001	0.0001	0.0004	0.00002	0.03
9	1	8 - 9	2029	3	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0034	0.0247	0.0055	0.0001	0.0001	0.0004	0.00002	0.03
10	1	9 - 10	2030	3	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0034	0.0247	0.0055	0.0001	0.0001	0.0004	0.00002	0.03
11	1	10 - 11	2031	3	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0034	0.0247	0.0055	0.0001	0.0001	0.0004	0.00002	0.03
12	1	11 - 12	2032	3	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0034	0.0247	0.0055	0.0001	0.0001	0.0004	0.00002	0.03
13	1	12 - 13	2033	3	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0034	0.0247	0.0055	0.0001	0.0001	0.0004	0.00002	0.03
14	1	13 - 14	2034	3	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0034	0.0247	0.0055	0.0001	0.0001	0.0004	0.00002	0.03
15	1	14 - 15	2035	3	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0034	0.0247	0.0055	0.0001	0.0001	0.0004	0.00002	0.03
16	1	15 - 16	2036	3	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0034	0.0247	0.0055	0.0001	0.0001	0.0004	0.00002	0.03
17	1	16-17	2037	1	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0004	0.0027	0.0006	0.00001	0.00001	0.00005	0.000002	0.004
18	1	17-18	2038	1	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0004	0.0027	0.0006	0.00001	0.00001	0.00005	0.000002	0.004
19	1	18-19	2039	1	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0004	0.0027	0.0006	0.00001	0.00001	0.00005	0.000002	0.004
20	1	19-20	2040	1	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0004	0.0027	0.0006	0.00001	0.00001	0.00005	0.000002	0.004
21	1	20-21	2041	1	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0004	0.0027	0.0006	0.00001	0.00001	0.00005	0.000002	0.004
22	1	21-22	2042	1	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0004	0.0027	0.0006	0.00001	0.00001	0.00005	0.000002	0.004
23	1	22-23	2043	1	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0004	0.0027	0.0006	0.00001	0.00001	0.00005	0.000002	0.004
24	1	23-24	2044	1	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0004	0.0027	0.0006	0.00001	0.00001	0.00005	0.000002	0.004
25	1	24-25	2045	1	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0004	0.0027	0.0006	0.00001	0.00001	0.00005	0.000002	0.004
26	1	25-26	2046	1	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0004	0.0027	0.0006	0.00001	0.00001	0.00005	0.000002	0.004
27	1	26-27	2047	1	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0004	0.0027	0.0006	0.00001	0.00001	0.00005	0.000002	0.004
28	1	27-28	2048	1	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0004	0.0027	0.0006	0.00001	0.00001	0.00005	0.000002	0.004
29	1	28-29	2049	1	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0004	0.0027	0.0006	0.00001	0.00001	0.00005	0.000002	0.004
30	1	29-30	2050	1	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0004	0.0027	0.0006	0.00001	0.00001	0.00005	0.000002	0.004
Total Increased Cancer Risk												4.58	0.54	0.12	0.002	0.001	0.009	0.0003	**5.25**

* Third trimester of pregnancy

Newpark Mall Project - Costco, Newark, CA - Impacts from Construction and GDF Operation
Maximum Cancer Risk at Offsite MEI
1.5 meter receptor height

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

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

TAC	CPF
DPM	1.10E+00
Benzene	1.00E-01
Ethylbenzene	8.70E-03
Formaldehyde	2.10E-02
Naphthalene	1.20E-01
1,3 Butadiene	6.00E-01
Acetaldehyde	1.00E-02
Toluene	-
Xylenes	-

Values

	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
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

Project Operation Risk by Year - Maximum Impact Receptor Location

Maximum - Exposure Information					Concentration (ug/m3)							Cancer Risk (per million)							TOTAL
Exposure Year	**Exposure Duration (years)**	**Age**	**Year**	**Age Sensitivity Factor**	**DPM**	**Benzene**	**Ethylbenzene**	**Formaldehyde**	**Naphthalene**	**1,3 Butadiene**	**Acetaldehyde**	**DPM**	**Benzene**	**Ethylbenzene**	**Formaldehyde**	**Naphthalene**	**1,3 Butadiene**	**Acetaldehyde**	
0	0.25	-0.25 - 0*	2021	10	0.0494	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.6713	0.0000	0.0000	0.0000	0.0000	0.0000	0.00000	0.67
1	0.4	0 - 1	2021	10	0.0494	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	3.4206	0.0000	0.0000	0.0000	0.0000	0.0000	0.00000	3.42
2	1	1 - 2	2022	10	0.0252	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	1.1331	0.1569	0.0346	0.0006	0.0004	0.0027	0.00003	1.33
3	1	2 - 3	2023	3	0.0031	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0809	0.0247	0.0055	0.0001	0.0001	0.0004	0.00002	0.11
4	1	3 - 4	2024	3	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0034	0.0247	0.0055	0.0001	0.0001	0.0004	0.00002	0.03
5	1	4 - 5	2025	3	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0034	0.0247	0.0055	0.0001	0.0001	0.0004	0.00002	0.03
6	1	5 - 6	2026	3	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0034	0.0247	0.0055	0.0001	0.0001	0.0004	0.00002	0.03
7	1	6 - 7	2027	3	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0034	0.0247	0.0055	0.0001	0.0001	0.0004	0.00002	0.03
8	1	7 - 8	2028	3	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0034	0.0247	0.0055	0.0001	0.0001	0.0004	0.00002	0.03
9	1	8 - 9	2029	3	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0034	0.0247	0.0055	0.0001	0.0001	0.0004	0.00002	0.03
10	1	9 - 10	2030	3	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0034	0.0247	0.0055	0.0001	0.0001	0.0004	0.00002	0.03
11	1	10 - 11	2031	3	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0034	0.0247	0.0055	0.0001	0.0001	0.0004	0.00002	0.03
12	1	11 - 12	2032	3	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0034	0.0247	0.0055	0.0001	0.0001	0.0004	0.00002	0.03
13	1	12 - 13	2033	3	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0034	0.0247	0.0055	0.0001	0.0001	0.0004	0.00002	0.03
14	1	13 - 14	2034	3	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0034	0.0247	0.0055	0.0001	0.0001	0.0004	0.00002	0.03
15	1	14 - 15	2035	3	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0034	0.0247	0.0055	0.0001	0.0001	0.0004	0.00002	0.03
16	1	15 - 16	2036	3	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0034	0.0247	0.0055	0.0001	0.0001	0.0004	0.00002	0.03
17	1	16-17	2037	1	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0004	0.0027	0.0006	0.00001	0.00001	0.00005	0.000002	0.004
18	1	17-18	2038	1	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0004	0.0027	0.0006	0.00001	0.00001	0.00005	0.000002	0.004
19	1	18-19	2039	1	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0004	0.0027	0.0006	0.00001	0.00001	0.00005	0.000002	0.004
20	1	19-20	2040	1	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0004	0.0027	0.0006	0.00001	0.00001	0.00005	0.000002	0.004
21	1	20-21	2041	1	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0004	0.0027	0.0006	0.00001	0.00001	0.00005	0.000002	0.004
22	1	21-22	2042	1	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0004	0.0027	0.0006	0.00001	0.00001	0.00005	0.000002	0.004
23	1	22-23	2043	1	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0004	0.0027	0.0006	0.00001	0.00001	0.00005	0.000002	0.004
24	1	23-24	2044	1	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0004	0.0027	0.0006	0.00001	0.00001	0.00005	0.000002	0.004
25	1	24-25	2045	1	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0004	0.0027	0.0006	0.00001	0.00001	0.00005	0.000002	0.004
26	1	25-26	2046	1	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0004	0.0027	0.0006	0.00001	0.00001	0.00005	0.000002	0.004
27	1	26-27	2047	1	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0004	0.0027	0.0006	0.00001	0.00001	0.00005	0.000002	0.004
28	1	27-28	2048	1	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0004	0.0027	0.0006	0.00001	0.00001	0.00005	0.000002	0.004
29	1	28-29	2049	1	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0004	0.0027	0.0006	0.00001	0.00001	0.00005	0.000002	0.004
30	1	29-30	2050	1	0.0001	0.0105	0.0267	0.0002	0.0000	0.0000	0.0001	0.0004	0.0027	0.0006	0.00001	0.00001	0.00005	0.000002	0.004
Total Increased Cancer Risk												5.35	0.54	0.12	0.002	0.001	0.009	0.0003	**6.03**

* Third trimester of pregnancy